

# The Aviation Historian<sup>®</sup>

The modern journal of classic aeroplanes and the history of flying

## THE **REAL** CATCH-22

JOSEPH HELLER'S WW2 COMBAT CAREER



ISSUE **No 18**





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# The Aviation Historian®

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## Editor's Letter

"IT WAS LOVE at first sight". It's one of the most memorable opening lines in 20th-Century literature, and the phrase that its author, Joseph Heller, claimed was the genesis of what would become his enduring masterpiece — *Catch-22*. Heller's 1961 novel relates the experiences of a USAAF B-25 bombardier in the Mediterranean during World War Two. Heller knew what he was talking about: he'd completed 60 combat missions over Italy in 1944. Published here for the first time in English, Pavel Türk's profile of Heller's wartime career gives an insight into where the novelist found inspiration for characters including the abominable General Dreedle, Snowden the tragic gunner and the morally flexible quartermaster Milo Minderbinder.

No less brutal, boardroom conflicts also feature in this issue, with Professor Keith Hayward's analysis of BOAC's troubled procurement of the VC10, in which the Corporation was very much caught between a rock and a hard place; and David H. Stringer's biography of George T. "Ted" Baker, the famously combative owner of Florida-based National Airlines. Typical of the band of ruthlessly ambitious silverbacks who forged the USA's early airline system, Baker loved a scrap; when he and Eastern Airlines' boss Eddie Rickenbacker went head-to-head, they became scorpions in a bottle, as David's article illustrates.

Another alpha male unafraid to make his presence felt was General Curtis LeMay, who, as Robert Hopkins III explains (pages 46–55), appropriated an early Boeing KC-135 to prove the value of a cutting-edge VIP transport in a Cold War world. It is said that when a crew chief warned "Old Iron Pants" against smoking his ever-present cigar beside an aircraft while it was being refuelled, lest it explode, LeMay narrowed his eyes and replied, "It wouldn't dare . . ." Happy reading!

**FRONT COVER** *A picture you can almost hear — B-25s line-up for take-off during the making of the 1970 film Catch-22.* ALPHA ARCHIVE

**BACK COVER** *The unmistakable, beautifully sculpted empennage of the Vickers VC10 — see pages 10–19.* BROOKLANDS MUSEUM TRUST



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# AIR CORRESPONDENCE



## Letters to the Editor

### Spitfire shenanigans

**SIR** — I've been enjoying Issue No 17 and was pleasantly surprised to see Juanita Franz's *An Eye For Detail* article on Spitfire TZ138, which rang a bell in my memory.

I believe that at least a part of the "intrigue" alluded to on page 70 involved the potential purchase of the aircraft by my late friend, Señor Archie Baldocchi of El Salvador. Archie owned a variety of unusual aircraft over the years, including a Republic AT-12 Guardian, Savoia-Marchetti S.56bis, Lockheed P-38, North American P-51 and assorted North American AT-6s, amongst many others, most of which reached El Salvador. He once told me that he came very close to acquiring the aircraft, possibly acting on behalf of the hard-pressed Government of Guatemala circa 1954. This may well have been one of his candidates. In his

collection was a single 35mm black-and-white negative of the subject aircraft; I have no date or location, although he frequently acquired aircraft in both Florida and California. The registration on the fin is just too fuzzy to make out, but could be N5505. The colours remain essentially the same as when raced, minus the "Edmonton-Canada" legend on the aircraft's nose.

**Dan Hagedorn** Seattle, WA, USA

### A relic from a "Zepp"

**SIR** — The article on the Zeppelin raid of September 2, 1916 (*The Reluctant Overnight Hero, TAH16*), and specifically the loss of the German airship SL 11 over Hertfordshire, provided timely information that filled a gap. My wife and I had been going through boxes of documents and had just found a mysterious envelope that contained a single piece of wire taken from the wreckage.



Breaking for the border? Racing Spitfire FR.XIVe TZ138/N5505A, date and location of photograph unknown — see Dan Hagedorn's letter on this page. The "Imperial Oil Ltd" legend is still faintly visible above the cheatline on the forward fuselage. THE LATE ARCHIE BALDOCCHI VIA DAN HAGEDORN



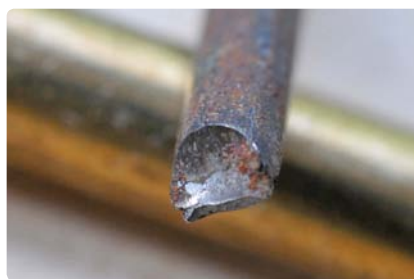
## More on Molotov wartime air bridge images



PHILIP HISCOCK x 3



**FOLLOWING PUBLICATION** of Ray Flude's article *The Molotov Express* in TAH14, about the USA—USSR air bridge established to allow face-to-face communication between Allied leaders during World War Two, these additional photographs came to light and are published here by kind permission of their owner, Philip Hiscock. They show **ABOVE LEFT** Soviet Foreign Minister Vyacheslav Molotov (front row, second from left) and his staff at Gander, Newfoundland, in 1942; **ABOVE RIGHT** Molotov in conversation in front of his Petlyakov Pe-8/TB-7 bomber transport, presumably at the same location, on May 6 of that year; and **ABOVE** a splendid view of the Pe-8 on a hardstanding at Gander. The origins of these images are uncertain, although they look like prints of official pictures; Philip reports that "They were advertised on eBay around 2002 and I think I was the only bidder, buying them for a pittance, under ten dollars if I remember correctly. They came to me (in St John's, Newfoundland) from a person in the USA — my impression at the time was that a serviceman had them in his possession and when he died the pictures found their way into hands that simply sold them on eBay".



ABOVE Vaughan Pomeroy's souvenir piece of bracing wire from German airship SL 11 and the envelope giving its provenance. LEFT About an inch long, the wire has a dark-brown coating — possibly slight corrosion, possibly the result of the fire or perhaps an original protective layer — and the cut end ABOVE LEFT remains mostly bright to this day, 100 years on.

The accompanying photographs show this envelope and contents. The envelope is  $3\frac{1}{4}$ in x 2in and bears the text "GUARANTEE. This is a piece of the wire of the first Zeppelin brought down at CUFFLEY, HERTS. September 3rd, 1916. The wire having been given to the British Red Cross Society by H.M. War Office, it is being sold to help the wounded at the front. Price 1/-".

The piece of wire is about 1in long and has been severed with wire-cutters, leaving the cut ends. The diameter of the wire is 0.121in, or 3.07mm. The ends show little corrosion despite the time since cutting, whilst the outer surface of the wire is brown in colour but without evidence of any serious pitting. Of course, the piece of wire has been in its envelope for nearly a century but the coloration of the outer surface is interesting. I suspect that this might be the result of exposure to the fire that engulfed the airship but it could also be evidence of a protective coating. If I get time I will explore the metallurgy further but I thought it might be interesting to others to read about this use of material from the wreckage of SL 11.

It is intriguing that the wreckage should be used in this way to provide souvenirs and to raise money for the Red Cross. The price of one shilling would be the equivalent of about £5 today, so it would be interesting to know how much money was raised by this effort.

Thank you for the excellent publication, which is always fascinating.

**Vaughan Pomeroy** South Croydon, Surrey

### P-61s and Project *Thunderstorm*

**SIR** — As an aside on the Black Widow story in *TAH4*, I can offer the following information. While the aircraft here were not directly civil-registered, I thought the information and photographs would be of interest to anyone interested in the type.

Project *Thunderstorm* was undertaken to understand more fully the problems of flying in heavy weather and the effects of lightning strikes on aircraft. At least one Northrop F-15 Reporter (USAAF serial 45-59318) participated in Project *Thunderstorm* weather testing at Clinton County Army Air Field, Wilmington, Ohio, in the summer of 1947. Most of the Northrops used in these tests were P-61Cs and both military and civilian (airline) pilots flew them.

Between nine and 13 P-61s were used in *Thunderstorm*, which took place in the summer of 1946 at Pinecastle AAF, Orlando, Florida, and in the summer of 1947 at Clinton County AAF.

They included a couple of interesting B models: P-61B-20 (quasi P-61G) serial 43-82989 (c/n 1344) which was at Wright Field in 1946 marked "All Weather Flying Center". This aircraft was the mock-up example for the P-61G weather/reconnaissance programme and was returned to Northrop after the modification process was completed. P-61B serial 43-8231 (c/n 1277) was added to the fleet for the summer of 1947 and was piloted by Captain Robert N. Buck of TWA.

Before the P-61Cs were used in *Thunderstorm*,



they had their exhaust collector rings and heat exchangers modified and had a 500hr inspection at Patterson Field, Ohio. These modifications were accomplished as a result of the earlier Project *Queen*. The Black Widows retained their SCR-720 radar, unlike the P-61G modifications. In 1947 the P-61Cs had their turbo regulators relocated and exhaust stack bolts modified at Tinker AAF, Oklahoma.

P-61s flown in Project *Thunderstorm* included:

P-61C	43-8327 (c/n 1373)
P-61C	43-8330 (c/n 1376) later to
	NACA as 330 and then to NASM
P-61C	43-8331 (c/n 1377)
P-61C	43-8333 (c/n 1379)
P-61C	43-8344 (c/n 1390)
P-61C	43-8351 (c/n 1397)
P-61C	43-8353 (c/n 1399)
P-61C	43-8354 (c/n 1400)
P-61C	43-8356 (c/n 1402)

From one to five F-15 Reporters were flown in Project *Thunderstorm* and most served with the 8th Photo Recon Squadron in Japan immediately after World War Two. After redesignation, the aircraft became RF-61Cs. One identified *Thunderstorm* aircraft was RF-61C 45-59318.

**Thomas Parker** via e-mail



## Flatpack ASJA Sk 10



NED REIF

*Inspired by our article on Sweden's ASJA Sk 10 military trainer in TAH17, reader Ned Reif has produced this paper model. Working from the scale drawings we published, Ned employed various computer programs to create the model in flat form, then used a colour laser copier to print it on 120gsm A3 silver paper, before cutting the components out and assembling by hand. See more of Ned's work on Flickr at [www.flickr.com/photos/139506782@N02/albums/with/72157671433855606](http://www.flickr.com/photos/139506782@N02/albums/with/72157671433855606), or contact the Editor to be put in direct touch with him and perhaps even obtain a model to make for yourself.*

*Four Black Widows and a Reporter prepare to depart Clinton County AAF. Note other Operation Thunderstorm aircraft in the background, including Flying Fortresses and Skymasters. See Thomas Parker's letter on these pages.*



THOMAS PARKER

# BETWEEN THE DEVIL & THE DEEP BLUE SEA

Continuing his series on the political aspects of Britain's most significant post-war civil aircraft developments, **Prof KEITH HAYWARD FRAeS** digs deep into the archives to reveal how all parties involved in the procurement of the Vickers VC10 for BOAC were compromised by the conflicting agendas of airline and industry





**B**Y THE MID-1950s the fleet planning of the British Overseas Airways Corporation (BOAC) was in some disarray. Following the series of de Havilland Comet disasters in 1954 and the politically sensitive cancellation of the Vickers V.1000 in 1955, BOAC had thought it could rely on the Bristol Britannia turboprop and the modified Comet 4 to remain competitive on the key North Atlantic routes.<sup>1\*</sup> Initially, both the airline and the British Government felt that this was a sound strategy. However, by the summer of 1956, with its competitors flocking to order Boeing 707 or Douglas DC-8 jetliners, BOAC was forced to look across the Atlantic.

While there was some official scepticism about the performance promised by the American jets, BOAC requested permission on July 26, 1956, to order 17 (later reduced to 15) Boeings powered by Rolls-Royce Conway engines. As a condition of the deal, however, BOAC was required to look at a British-built solution to its "Eastern" or "Empire" route needs. Ideally, this

should be undertaken as a private venture in order to conform to a government policy aimed at reducing — and ultimately ending — direct public support for civil aircraft development.

### THE ONLY GAME IN TOWN?

Buoyed by profits from its Viscount turboprop and the promise of a large launch order from BOAC, Vickers — and as became apparent, only Vickers — was prepared to tackle the project under these terms.<sup>2</sup> As future BOAC chairman Sir Matthew Slattery would later observe:

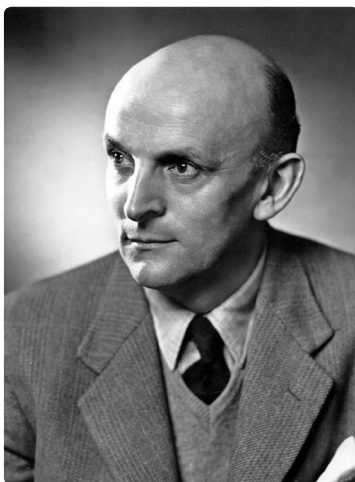
"There was only one company prepared to embark upon such an aeroplane, and that was Vickers. We now get to the stage where you could have any colour so long as it was black. You have got to have a British aircraft, and there is only one possible aircraft. I am quite sure that the Corporation was quite free to make any choice [it] liked."<sup>3</sup>

As the Treasury later noted: "Whether the VC10 was the best aircraft available for BOAC was not questioned at this time".<sup>4</sup> This did

\* Endnotes are provided at the end of the feature



*The rivals — Boeing 707 G-APFI shares ramp space with fellow BOAC aircraft Super VC10 G-ASGA and standard VC10 G-ARVL at Heathrow in October 1967. The American jetliner was perceived to be more cost-efficient to operate, but the Super VC10 ultimately proved more profitable, with much higher load factors on the vital North Atlantic route.*



**ABOVE LEFT** *The Chairman of BOAC in the early days of discussions about what would become the VC10, Sir Miles Thomas, resigned from the Corporation in 1956. ABOVE MIDDLE* *Sir George Edwards, Vickers' Managing Director, joined the company at Weybridge in 1935. ABOVE RIGHT* *Duncan Sandys, Minister of Aviation during 1959–60.*

not mean that the two were dragooned into partnership; Vickers and BOAC had been discussing this requirement for some months. An outline specification produced by the airline's planning staff called for a design optimised for "hot and high" airfield performance and, given the lower passenger density of these routes, with a capacity smaller than the American jets, which would "best serve the needs of the Corporation".<sup>5</sup> Vickers stated that it could produce a suitable aircraft for BOAC at £1.75m (roughly equivalent to £43m in 2017) per airframe, but on condition that the airline ordered 35 aircraft, later increased to 42 when a transatlantic version was added.

BOAC had hoped to place a smaller initial order, increasing numbers as demand grew. In January 1958 BOAC announced an order for the VC10 in a contract worth £68m (£1.7bn) — at the time the most expensive single order for a British airliner.<sup>6</sup> The size of the order was subject to both external and internal questioning. Outside analysts felt that BOAC had an overly optimistic view of the market. Ministry of Aviation (MoA) officials later conceded that "35 may have been a bit high", but Vickers made it clear that this was the minimum needed to launch the aircraft as a private venture.

The most important factor from the Conservative government's point of view was that it vindicated its private-venture policy, and that the size of the order and Vickers' willingness to pay for its development "were clearly tied together". Even the Treasury could not later find direct evidence of undue Government pressure:

"History suggests that much of the original discussion took place as unrecorded meetings between the [BOAC] Chairman [Sir Miles Thomas until May 1956] and the Minister of Transport & Civil Aviation [Harold Watkinson]. The first the Treasury knew of a potential order was a letter to the Chancellor [Harold Macmillan] dated May

2, 1956, which explained the innovative nature of the design, [which would be] competitive with the Americans, and that Vickers would develop it as a private venture".<sup>7</sup>

In the Treasury's view this was, in retrospect, a very ill-judged step and based on a very narrow assessment of future development potential: "The Government's insistence on a private venture led to a thoroughly uneconomic purchase by the Corporation, by no means fulfilling [its] earlier stated requirements, and at a time when the Corporation, guaranteed with Government funds, was already running at a loss; it was the smallest number for which Vickers would undertake [the project] as a private venture".

Neither the Ministry of Supply (MoS) nor the Ministry of Transport & Civil Aviation (MoTCA) seemed to be too bothered that the design would need further development to be competitive on North Atlantic routes.<sup>8</sup>

In its haste to confirm the deal, Vickers held to a rear-engined clean-wing concept that offered the best answer to the Empire requirement for "hot and high" airfields that might only have semi-prepared runway surfaces, a risk to any podded engine.<sup>9</sup> Sir George Edwards, Vickers' Managing Director, later admitted that if the company had produced a design for the North Atlantic from the outset, it would have looked like the cancelled V.1000. Soon after the original specification was defined, BOAC accepted some changes to give the aircraft better overall performance. The BOAC Board also overruled a last-minute challenge to the whole project from its Engineering Department.<sup>10</sup> Even with such a large order, Vickers nevertheless assumed a considerable risk, with development costs initially put at £6.25m (£165m); the £1.75m unit price of the first order of 35 aircraft implied an immediate loss of £3m (£67m), which Vickers was expected to make up through exports of the





TAH ARCHIVE

**ABOVE** Encouraged by healthy sales of its Viscount turboprop airliner, Vickers began discussions with BEA in 1953 about a successor which would be larger, faster and offer better economics. The prototype Vanguard made its first flight in 1959, but only 44 would be built. Seen here is second production example G-APEB, named Bellerophon.

new type.<sup>11</sup> Vickers estimated that it needed to sell a total of 80 VC10s to break even.

For its part, the MoS (under Reginald Maudling) was very pleased with the outcome: "This represents a major step forward in our policy of encouraging the private-sector financing of civil aircraft, and I think that the Government will be able justly to claim great credit for it".<sup>12</sup>

The combination of private-venture development supported by a large domestic order seemed to have worked; it was certainly used as leverage in the debate over British European Airways' order for a new medium-range jet, the de Havilland D.H.121 Trident, which ended up being funded on the same basis as the VC10. [For the full story of BEA's procurement of the D.H.121, see Trident: Britain's Fork in the Road in TAH16.] While the Trident launch attracted much controversy, development of the VC10 moved on without too much initial trouble. This was soon to change. By 1959 the VC10 programme was in difficulty, with Vickers close to ruin.

### THE VICKERS FINANCIAL CRISIS OF 1959

In mid-1959 Vickers warned BOAC that the costs of developing the VC10 had increased, and that the airline would have to find the money to cover the difference.<sup>13</sup> Vickers suggested that matters would be improved if BOAC could change its order in favour of a stretched (Super) VC10 more able to compete with the American jets on the North Atlantic route, but the airline was reluctant to take on the even heavier burden of supporting a larger and more expensive version.<sup>14</sup> A 1959 Cooper Brothers audit for the MoS revealed an underestimate of losses on the BOAC order, which were now put at £15m (£312m).<sup>15</sup> In June 1959 Vickers warned of potential difficulties without direct government aid. Speaking at the Vickers AGM, its chairman, Viscount Knollys,

argued that "the Government [has] to appreciate and ease the great and disproportionate financial burden borne by Vickers and other companies in private ventures. Without firm and early support by the Government . . . this country is more likely, sooner rather than some people might expect, to find itself without a real aircraft industry at all."<sup>16</sup>

Vickers' problems had emerged very rapidly; the company had grossly underestimated the costs of developing both the Vanguard turboprop and the VC10. According to Sir George Edwards this was not uncommon in the industry, but in this case the estimates "proved wrong by quite a bit".<sup>17</sup> Boeing and Douglas had also launched a price-cutting campaign, and a fourth competitor — the Convair 880 — had entered the market.<sup>18</sup>

The solution to Vickers' problem, as well as a more general crisis affecting the British aircraft industry, was to encourage rationalisation as the price for government aid.<sup>19</sup> Vickers was already in discussions with de Havilland about a merger when the new and energetic Minister of Aviation, Duncan Sandys, opened his industrial "marriage bureau".<sup>20</sup> (The MoTCA had become the Ministry of Aviation in October 1959.) By December 1959 Vickers and English Electric were close to forming what would become the British Aircraft Corporation (BAC). However, such was the parlous state of Vickers' finances that a full merger depended on the Government giving support to new airliner development — namely the medium-haul VC11 for BEA — and helping out with the costs of the VC10 programme.

Not only had the price Vickers agreed with BOAC for the VC10 been too low — £1.2m (£26m) per aircraft instead of a more realistic £1.4m (£29m) — the non-recurring costs for its development had "reached astronomical figures despite the most stringent controls". This was on top of Vanguard losses, by this time put at



**ABOVE** Beside a model of the Super VC10 as originally envisaged, with tiptanks and 28ft (8.5m) fuselage stretch, the BOAC contract for 35 standard and ten Super VC10s is signed on June 23, 1960. Left to right: N.H. Jackson, Director, Vickers; Sir George Edwards; K.H. Staple, Secretary, BOAC and Charles Abell, chief engineer, BOAC.

more than £7m (£147m).<sup>21</sup> Vickers wanted £15m (£309m) from the Government for both the VC10 and VC11. Vickers' contribution (new and sunk costs) would total £21m (£441m). The Government would get its money back at a ten per cent rate if 85 VC10s and 110 VC11s were sold.<sup>22</sup>

Sandys was well aware of the need for speed, and understood that if matters were left hanging until February 1960 Vickers' problems could reach breaking point. The MoA felt that a package worth £17.6m (£368m) would suffice. At a crucial meeting with Sandys and his officials, Sir George Edwards suggested that BOAC might be persuaded to drop its Boeings, then due to enter service in April 1960, in favour of the Super VC10. The RAF might also be encouraged to use a VC10/Super VC10 hybrid, with the standard VC10's short fuselage and the wings, tailplane, undercarriage and extra fuel capacity of the Super. However, the officials challenged Edwards' assertion, citing BOAC's obligation to act commercially, and estimated that the total financial call (including the cost of Boeing sales) would amount to £28.2m (£588m).<sup>23</sup> Sandys nevertheless agreed to include some direct support for the Super VC10 in the new arrangements for civil aircraft support, which were agreed by the Cabinet in January 1960.

Sandys admitted that the VC10 was hardly a "promising civil project", but the decision to support it was taken "mainly on the ground that it is necessary to tide Vickers over [its] present difficulties in order to prevent [it] going out of the civil business, and in the hope of greater

success with future civil projects, when a group of sufficient strength has been created". The new policy would include a launch-aid scheme for civil aircraft developments and the concentration of contracts among the merged groups.<sup>24</sup> The new consortium, BAC, and a second group, Hawker Siddeley Aviation (including de Havilland), would now form the core of the UK airframe industry, and manufacturers of future civil aircraft could apply for government launch aid.

### RESTRUCTURING THE BOAC ORDER

BOAC was now under strong pressure to help the rationalisation process by reshaping the VC10 contract. This entailed taking at least ten of the longer-range Super VC10s at £2.7m (£58m) per aircraft. Sandys implied that a Vickers bankruptcy would cost BOAC £6m (£125m) in lost progress payments. In 1960 the incoming BOAC chairman, Sir Matthew Slattery, asked for some time to consider the options, but was forestalled by his predecessor, Sir Gerard d'Erlanger, who agreed to a new contract, signed that June, for 35 standard and ten Super VC10s, before the handover.<sup>25</sup>

There is no direct evidence of exactly how much pressure Sandys applied to d'Erlanger, but BOAC "bent over backwards to meet the Minister's wishes", and a Treasury official learned in the strictest confidence that below Board level there "was considerable doubt within the Corporation as to the wisdom of ordering the Super VC10".<sup>26</sup> Treasury officials were left in no doubt that the Minister "will not accept that this order for [the]





**ABOVE** The prototype VC10, G-ARTA, nears completion at Weybridge in late 1961 or early 1962. Structurally the VC10 exploited the integral machining techniques adopted for production of the Vanguard's wing panels, and the use of fuselage hoop frames and inner wing members was a direct carry-through from Vickers' earlier V.1000.

Super VC10 is in any degree open to question".<sup>27</sup>

The RAF was rather less of a pushover when asked to take on the VC10 as a military transport; the Air Council was not as "amenable" as BOAC, and made a decision to buy "independently and in [its] own time".<sup>28</sup> Sandys claimed that he was equally concerned about the financial health and welfare of both the airline and aircraft industries, but as a House of Commons Select Committee later reported, "BOAC's confidential documents show that the rehabilitation of Vickers and [its] merger . . . [were] constantly on the minds of BOAC's Board, and particularly of Sir Gerard d'Erlander, in the discussions that followed". The new team of Slattery and Sir Basil Smallpeice admitted that it was "a bit of a gamble".<sup>29</sup>

In April 1961, despite internal concerns about the VC10's unfavourable operating costs compared to those of the 707 or DC-8, BOAC agreed to a restructured order comprising three more 707s, 15 standard and 30 Super VC10s, the latter now a scaled-down design. This would cost an additional £6.3m (£131m), taking the total VC10 cost up to £101.4m (£2.1bn).

The Treasury sourly noted that the BOAC case seemed to indicate that "an expansion of traffic was planned to meet the problems created by the delivery of new aircraft, rather than the other way round". Press reports argued that BOAC may already have been in the position of having to sell off some of its DC-7s and Britannias as a result of falling demand, and that to justify the new orders the airline had to assume a doubling of the

current growth rate to 14 per cent per annum.<sup>30</sup>

The growing burden of the VC10 order on BOAC's own increasingly parlous financial performance soon came to a head. With the ink on the April 1961 contract hardly dry, the Treasury (under Chancellor of the Exchequer Selwyn Lloyd) demanded cuts to the Super VC10 order. The Secretary of State for Air, Julian Amery (to become Minister of Aviation in July 1962), rejected this out of hand, and in October wrote to the Treasury:

"I would remind you that the VC10 project was closely considered by ministers in 1959 when Vickers [was] saying [it] would have to go out of the civil aircraft business altogether if this programme was not further supported. It was out of this situation that the Government decided it must continue with further support represented by the [June 1960] BOAC order for ten Super VC10s and additional support for development, and this was one of the considerations which led to the formation of BAC. To go back on all of this at the present stage would be quite unthinkable."

Amery continued:

"To continue the uncertainty at this stage would cause enormous difficulties with Vickers, with the inescapable implication that the VC10 order might be substantially reduced or even cancelled. A fundamental reassessment at this stage, with all the delay it would incur, the doubts that it would cast on the only big British jet in prospect and the uncertainty it would create in BOAC, would be a major calamity."<sup>31</sup>



**ABOVE** The VC10 prototype was rolled out of the Weybridge hangar on April 15, 1962, resplendent in its BOAC colour scheme of royal blue, grey and white, with gold detailing. Two months later it was ready to fly at last, after more than five years of development; it is seen here on June 29, 1962, being readied for its maiden flight.



**ABOVE** The prototype undergoes engine trials at Weybridge with the help of a pair of bifurcated Cullum detuners in mid-June 1962. One of these detached during a full-power run of both engines on one side, blowing the unit 100ft (30m) down the taxiway. **BELOW** Prototype G-ARTA lifts off from the Weybridge runway on June 29, 1962.







**ABOVE LEFT** Julian Amery, *Secretary of State for Air during 1960–62 and Minister of Aviation from 1962 to 1964.*  
**ABOVE MIDDLE** Rear Admiral Sir Matthew Slattery, *BOAC Chairman during 1960–63, had previously held senior positions at Short Bros & Harland and Bristol.* **ABOVE RIGHT** Sir Giles Guthrie, *who replaced Slattery in 1963.*

To the Treasury it seemed as if the newly formed BAC was “not much better able to bear the setback of a cancelled order than Vickers alone would have been. But in view of the general policy considerations in relation to the aircraft industry, and of the fact as we understand it [that] BOAC [is] firmly committed to Vickers up to the figure of £151m (£3.1bn), we agree [that] we cannot press this point further”.

The Treasury had accepted from the outset that while the aircraft would not be exported in numbers, and that it was not a productive investment for the Government, because of the importance of Vickers, and BAC’s importance as perhaps the better of the two recently reorganised groups of manufacturers of civil aircraft, the view was taken in the Treasury that (author’s italics) “BOAC’s interests must of necessity come second to those of the industry at this juncture”.<sup>32</sup>

In 1963 BOAC’s deficit topped £80m (£1.5bn) with the prospect of further losses taking it to £90m (£1.7bn) by March 1964. The crisis forced Amery to appoint an outsider, John Corbett, to review BOAC’s finances.<sup>33</sup> The Corporation’s problems had been caused primarily (but by no means only) by the cost of its fleet planning. Some of the losses were attributed to bad luck, such as the Comet disasters and the delays of the Britannia programme, but the financial burden of the VC10 programme was the largest single drain on BOAC’s resources, and the latter should have simply walked away from the contract. The Corporation also contended that the VC10 fleet would cost around £7m (£133m) a year more to operate than a comparable fleet of 707s. The other part of the loss was down to bad management, some £15m (£286m) being lost in unsuccessful investment in associated companies.<sup>34</sup>

In November 1963 the Government requested the resignations of BOAC’s senior management

team of Sir Matthew Slattery and Sir Basil Smallpeice, and a new chairman, Sir Giles Guthrie, was asked to produce, “within a year, a plan for putting BOAC on its feet financially. This will involve a review of the organisation of the Corporation, of its route structure and of the composition of its aircraft fleet.”<sup>35</sup> Guthrie would also receive a clarification of the “buy British” policy, which would define the circumstances and the compensation open to the Corporation if it was directed by the Minister of Aviation to act contrary to its own commercial interests in support of government policy.<sup>36</sup>

On appointment, Guthrie hinted at cancelling a large part of the VC10 order, at a cost of £20m (£380m) in cancellation charges. This, according to Treasury calculations, “would appear to be many times the cost in development assistance which would have been required by the manufacturers of the VC10 [had a private venture not been insisted on when the aircraft was first ordered] to avoid the necessity for an inflated first order by BOAC”.<sup>37</sup> Guthrie felt that BOAC had ordered 23 too many Super VC10s and wanted to cancel them and order seven more Boeings. Caught between its pledge to maintain Guthrie’s freedom of action and responsibilities towards the aircraft industry (and with an election pending), the Government temporised. Eventually, the Government directed that BOAC should take 17 Super VC10s; the RAF would take three more (ultimately built as RAF Type 1106 hybrids), with the remainder “suspended without prejudice”. BOAC also obtained a capital reconstruction.<sup>38</sup>

## PROOF OF THE PUDDING

In the event, the VC10 proved to be a very popular aircraft with passengers, attracting ten per cent higher load factors than the 707.<sup>39</sup> It would also ultimately go on to give decades of stalwart



**ABOVE** BOAC's Conquest-powered 707-436s entered regular service on June 6, 1960, with the inauguration of a thrice-weekly service from London to New York, the airline's Comet 4s being withdrawn from North Atlantic routes from October that year. The Corporation introduced the VC10 into service on African routes from April 1964.

TAH ARCHIVE

service as a tanker/transport for the RAF. But the commercial data are unyielding: a total of 12 Type 1101 VC10s and 17 Type 1151 Super VC10s were acquired by BOAC during 1964–69. After the last of the line, a Type 1154 Super VC10 for East African Airways, was delivered in February 1970, production was closed, a mere 54 airframes having been built. In startling contrast, some 1,010 Boeing 707s and 556 Douglas DC-8s were sold to customers all over the world. Even the loss-making Convair 880 accrued 65 sales.


The VC10 as originally conceived was built to a narrowly-drawn specification; later attempts to broaden its appeal and improve its economics had only a marginal effect. Even the advantages of short-field performance from high-altitude airports were largely negated as many of the runways at those airports were lengthened to take the American jets.

So often seen as the villain in the post-war history of the British civil aircraft industry, BOAC found itself caught between the devil and the deep blue sea with the VC10. Statutory requirements to act in a commercial manner could be, and often were, compromised by constraints imposed by ideologically-driven government policies and/or appeals to patriotic duty to do the "right thing" by the domestic aircraft industry. This could be costly; the Corporation had overcome the aftermath of the Comet crisis as well as a difficult period with the Britannia. The 19-month delay in bringing the Britannia 102 into service had entailed a net loss to BOAC of some £3m (£67m). Delays in introducing the Britannia 312 series cost the airline at least £2m (£45m) in the financial year and every month's delay thereafter added more than £500,000 (£11m) to its losses.<sup>40</sup>

In some cases, the *quid pro quo* was to demand aircraft "tailored" to its special requirements. This also applied to BEA, which seems to have been better able to drive harder bargains with both

industry and ministers.<sup>41</sup> Sir Matthew Slattery tried and failed to get a clear mandate from Minister of Aviation Julian Amery. In Slattery's view, past chairmen had held "elastic" views on what were BOAC's best commercial interests.<sup>42</sup> In truth, as one authoritative review of post-war jet airliners observes, "neither Vickers nor BOAC seems to have shown much judgment of its commercial needs".<sup>43</sup>

The VC10 was the last of its breed; the last long-haul commercial aircraft to be built entirely in Britain. In the aftermath of a political requirement to operate the supersonic Anglo-French BAC/Aérospatiale Concorde, BOAC (by then British Airways) would go on to win full independence of government direction over its aircraft procurement policy. Any remnants of the "buy British" policy would fade away completely with the privatisation of British Airways in 1987.

Ultimately, the British civil aircraft industry would survive and prosper as part of a European collective effort. But in the 1950s the Government adopted a pernicious and short-sighted doctrine, injurious to airline and manufacturer alike. The Corporation might have had the immediate advantage of tailoring designs to its requirements, but this meant nothing if operating the aeroplane cost it millions. For the manufacturer, tailoring carried the risk that other airlines would not buy the aircraft. In truth, the strategy was essentially conceived as a means for the Government to avoid directly supporting the civil aircraft industry. Instead, billions of pounds of taxpayers' money were wasted on an illusion; that the UK market could alone sustain increasingly complex and expensive aircraft programmes. 

**ACKNOWLEDGMENTS** The Editor would like to thank Abigail Wilson and Dick Curtis at Brooklands Museum ([www.brooklandsmuseum.com](http://www.brooklandsmuseum.com)) for their invaluable assistance with the preparation of this feature



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**BELOW** *The scaled-down Super VC10 had a reduced fuselage stretch, from the originally intended 28ft to 13ft (3.9m), and no wingtip fuel tanks. The prototype, G-ASGA, made its first flight from Weybridge on May 7, 1964, and is seen here impressing visitors with its high-lift wing devices at the SBAC show at Farnborough the same year.*

BAE SYSTEMS VIA BROOKLANDS MUSEUM TRUST



# A GRAND DAY OUT AT CHATEAU D'ARDENNE

In 1930 a former royal castle nestled in Belgium's Ardennes forest hosted the first of its series of "Aerial Weekends", at which aviators from all over Europe gathered in their state-of-the-art machines to enjoy each other's company. With the help of a recently rediscovered collection of magnificent photographs taken at the August 1930 event, **NICK STROUD** explores the Château d'Ardenne's golden flying years







**LEFT** A contemporary postcard of the Château d'Ardenne showing the former royal residence's distinctive twin towers, elegant facade and extensive gardens.

**OPPOSITE PAGE**  
Renowned Belgian aircraft designer Jean Stampe beside Stampe et Vertongen RSV 18/105 OO-APC at the second aerial rally at Château d'Ardenne, on August 30–31, 1930. The aircraft, then owned by the American Petroleum Company, was powered by a 105 h.p. Cirrus Hermes engine.

**D**URING THE SUMMER of 1930 a small but intrepid group of European aviators gathered in the magnificent grounds of the opulent Château d'Ardenne hotel in Belgium to meet fellow flying enthusiasts, swap notes on their state-of-the-art aerial runabouts and enjoy the hospitality of the owners of the former royal residence overlooking the Lesse river in the beautiful Ardennes forest. Over two weekends in May and August, aeronauts from the Netherlands, UK, France and Belgium made a beeline across the Low Countries for the picturesque twin-towered castle to greet old friends and meet a few new ones.

One of the guests at the second of the aerial rallies held at the château that year was distinguished Belgian Great War pilot Maurice “Teddy” Franchomme, who handed a set of 5in x 4in photographs of the event to his British test-pilot friend P.W.S. “George” Bulman when the latter paid a visit to Brussels in a Hawker Hart a few days later. Bulman, who died in 1963, was a keen collector of photographs and when, in 2009, a relative needed to find a good home for George’s remarkable photo collection, Surrey-based aviation enthusiast Alec O’Connor contacted the late aviation historian John Havers with a view to placing the collection with a suitable archive. Bulman had been Hawker’s chief test pilot from 1925 to 1945, during which time he had tested numerous types from Brooklands. The obvious choice was the world-class museum now on the site of the latter. After some impressive research into the aircraft and people in the château photographs, undertaken

by John Havers and Belgian historic aviation specialist Luc Wittemans, the photographs, along with the rest of Bulman’s collection, were donated to the museum, where they reside today under the diligent librarianship of museum volunteer and Hawker specialist Chris Farara.

Just before John Havers died in April 2016 he bequeathed his extensive aviation archive to *TAH*, and it was while going through this treasure trove that the trail of this wonderfully evocative set of photographs of the second Château d'Ardenne aerial rally came to light. We are delighted to have the opportunity to publish them, thanks to the sterling efforts of Alec O’Connor, John Havers, Luc Wittemans and the Brooklands Museum Trust.

## A CHÂTEAU FOR THE KING

The rolling hills and densely-forested ridges of the Ardennes region of Wallonia first found favour as a residential location for the Belgian royal family when King Léopold I added distinctive towers to a hunting lodge near Houyet in 1837, five years after his accession to the throne. Three years later the King acquired 220 hectares in nearby Ciergnon, where another hunting lodge was built, eventually becoming the site of the Château Royal de Ciergnon, a royal residence built by King Léopold II after his accession in 1865, and still used by the Belgian monarchy today.

In 1874 Léopold II ordered that the original twin-towered hunting lodge near Houyet be developed into a full château, which was duly completed in 1899 as the Château Royal d'Ardenne. It was not to remain a



**ABOVE** Jean Coomans and his wife with what is likely to be RSV 32/90 OO-AJP of the Antwerp Aviation Club at Château d'Ardenne during the second rally. Powered by a 90 h.p. Anzani six-cylinder radial, this was one of the club's first aircraft, originally being registered as O-BAJP before Belgium's OO- prefix was introduced in 1929.

royal residence, however; in January 1898 the *Compagnie Internationale des Grands Hôtels Européens* (CIGHE) took it over from the King, who wished to promote the Ardennes region as a holiday destination for the rich and famous, and turned it into a luxury hotel. A railway station was added to serve the château — strictly for use only by the King or hotel guests — in 1899, and an extensive golf course was built into the grounds the following year. For the next four decades the Château d'Ardenne (no longer "Royal") was to become a regular haunt for the well-off aerial adventurer.

In 1929, with the advent of affordable (for some) private flying, it was decided to add an airfield to the grounds, on a pasture less than a mile from the château. Underbrush was cleared, trees removed and the field, some 865ft (265m) above sea level, rolled as flat as possible. A chalk circle was incorporated to mark the airfield from above and a wooden shed was erected bearing the name "Ardenne"; a windsock was also installed. The maximum length of the field for take-off was 1,640ft (500m) in a north-west to south-east direction. By the summer of 1930, with construction largely completed, the airfield was ready to receive its first visitors.

### LE PREMIER "WEEKEND AÉRIEN"

The first of the château's "Aerial Weekends" was held on the weekend of May 17–18, 1930, and was organised by the *Club d'Aviateurs de Bruxelles*

(CAB — Brussels Flying Club) in association with *l'Association Professionnelle Belge des Journalistes Sportifs* (Belgian Association of Sports Journalists) and the CIGHE. The necessary authorisations for the event were provided by the Belgian *Direction l'Aéronautique* (Department of Aeronautics), part of the *Ministère des Transports* (Ministry of Transport). In charge of co-ordinating the event was Jean Coomans, Secretary of the CIGHE and a keen flyer himself, described by journalist Paul Narthon in Belgian magazine *La Conquête de l'Air* as "the intelligent and active linchpin of the whole event . . . who deserves much praise".

According to a contemporary report in British weekly *Flight*, some 20 aircraft, a large percentage of which had come from the UK, gathered at Brussels on the morning of the 17th, where they were given lunch before setting off for the château in the afternoon. Journalists were transported by coach from Brussels. The first aircraft to arrive at the château's airfield, at 1324hr, was Belgian-built (SABCA) Handley Page W.8 OO-AHJ of Sabena, with the airline's chief pilot, Prosper Cocquyt, at the controls.

By the end of the afternoon, 22 aircraft had arrived, British attendees including Miss Susan Slade, Miss Winifred Spooner, Mr and Mrs Ivor McClure and Messrs Nigel Norman and Alan Muntz of Airwork. Pioneering aviatrix Lady Mary Bailey ran out of petrol, and, after putting down in her de Havilland Moth at Gosselies,





**ABOVE** Next to arrive after the Coomans were Georges Hanet (left) and racing driver Blin d'Orimont in D.H.80A Puss Moth G-AAFA (c/n 2038). The following month Hanet won the Belgian Coupe Challenge International in the aircraft, which was sold to a new owner in 1936 before moving to Sweden the same year to become SE-AFH.

arrived at the château by car at 2330hr. A dinner-dance was held at the château in the evening, and the following morning was spent exploring the hotel and its grounds. After a hearty lunch the visitors departed and set course for home following an enjoyable and mishap-free weekend.

A little more than three months later, with the airfield having undergone further work, including improved signage and runway markings, a second aerial rally at the château was held over the weekend of August 30–31. Once again favoured with exceptional weather, the organisers managed to attract even more flyers from all over Europe, the final tally reaching some 26 aircraft. In charge once again was Jean Coomans, ably assisted by French pioneer aviator and First World War *Armée de l'Air* pilot Louis Fiorellino.

Coomans and his wife were first to arrive, in Stampe et Vertongen RSV 32/90 OO-AJP, at 1330hr. In his report on the second rally for *La Conquête de l'Air*, Belgian journalist Billy Prinxtion described the next of the aerial tourists to put in an appearance: "At 1630hr a graceful monoplane landed on the grass in front of the numerous people who had flocked to attend the arrival of the machines. It was the [de Havilland] Puss Moth of M [Georges] Hanet, carrying M Blin d'Orimont as his passenger".

Within a few minutes the rumbling of a pair of Rolls-Royce Eagle engines overhead announced

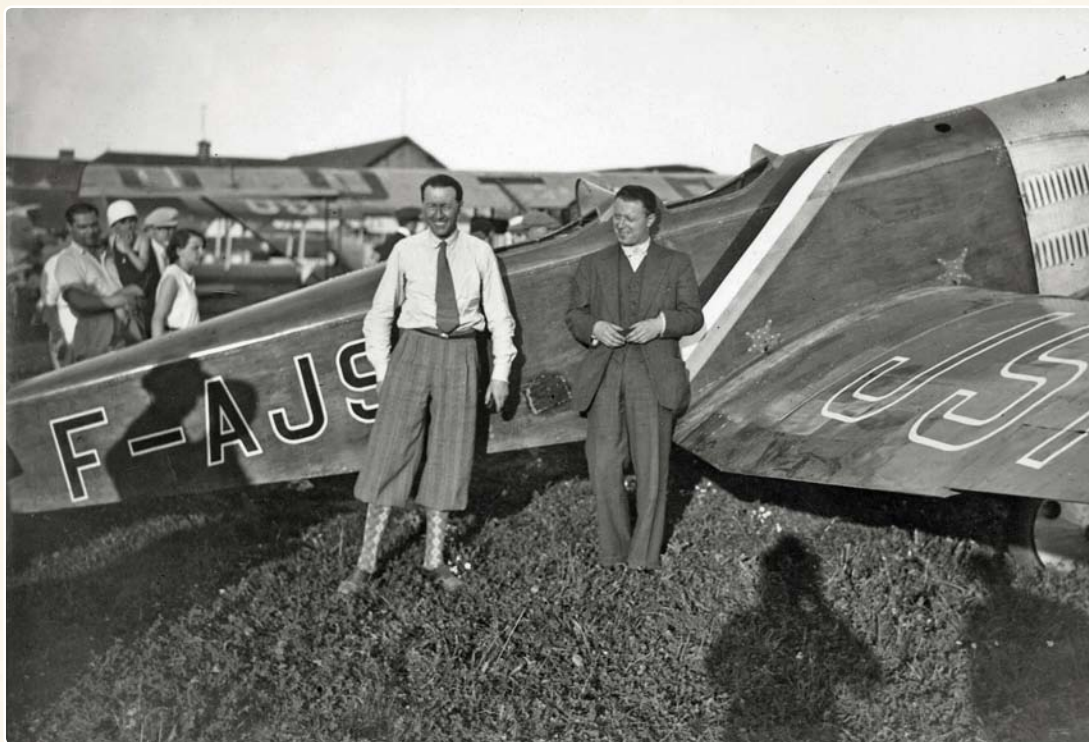
the arrival of the same SABCA Handley Page W.8, OO-AHJ, that had attended the first rally, once again with Prosper Cocquyt at the controls. Despite the comparatively confined space available for such a big aeroplane, Cocquyt brought the W.8 in to the field with consummate ease, his complement of eight passengers disembarking to be presented with a "*vin d'honneur*" — vintage port — as were all the event's flying visitors. Monsieur Cartuyvels de Collaert of the CAB was next to arrive in RSV 26/100 OO-AJV, followed at 1640hr by Viscount Raoul Vilain XIII (curiously never written as XIV) and his passenger Mr Narischkine in RSV 26/100 OO-AJT. Five minutes later two members of the *Club Français de Tourisme Aérien* (CFTA — French Aerial Touring Club) arrived to enjoy their well-earned glasses of port.

Next to land was Belgian playboy Lambert Keyenbergh in his RSV 32/90 OO-AJD, complete with his signature elephant motif on its fuselage. Flying the flag for the Dutch were M and Mme Frederick Koolhoven in the FK-42, PH-AGO, which arrived at 1700hr. Another aircraft designer of note, Belgium's Jean Stampe, followed in RSV 18/105 OO-APC, accompanied by M Hoebanx of the Antwerp Aviation Club.

The first of the Brits to arrive were Mary Dashwood Wilson and her passenger, Francis Fisher, representing the London Aero Club in Miss Dashwood Wilson's de Havilland D.H.60 Moth G-EBRY. Another Moth followed



**ABOVE** By far the largest aircraft to attend the rally in August 1930 was SABCA-built Handley Page W.8 OO-AHJ of Sabena. Seen here beside it at the airfield are, from left to right; M I. Renard, Director of Sabena; Mme J. Coomans; Col and Mme J. Smeyers; Mme Cocquyt; M Calembert; Capt Prosper Cocquyt (Sabena's chief pilot) and M Regout.



**ABOVE** In a splendid pair of plus-fours and argyle socks, well-known French aviator Ludovic Arrachart (left) and his passenger, M Schmoll, pose beside Caudron 193 F-AJSH (c/n 6478.4) shortly after their arrival at the château's airfield. The aircraft was fresh from participating in the Challenge Internationale de Tourisme earlier that month.





**ABOVE** Count Raoul Vilain XIII (right) and his passenger Mr Narischkine were fifth to arrive at the château on August 30, and are seen here beside their mount, RSV 26/100 OO-AJT of the Club d'Aviateurs de Bruxelles. The diminutive biplane was powered by a 100 h.p. Renard engine and bore the name J.B. Richard on the fuselage.

immediately afterwards, also from the UK, this example, G-AAVR, being flown by Kenneth A. Whittope of the Northampton Aero Club, with Mme Jeunejean as his glamorous passenger.

At 1710hr a diminutive Orta Saint-Hubert G.1, OO-ALL of the CAB, arrived carrying Robert Van de Velde and its owner, M Maréchal, followed immediately by D.H.60G G-AAEI, flown by the London Aero Club's Douglas Corsellis, who three months later would tragically be killed in a fogbound take-off from Stag Lane in the same aircraft. The next hour saw a steady stream of arrivals, including *Messieurs* R. de Caritat de Peruzzis and J. De Keyn in a rare Bulté RB-1, OO-AKR, Frenchmen André Chalaux and his passenger M Traval in Farman F.200 F-AJLT and Teddy Franchomme and passenger in Hanriot HD.14 OO-ALA. The Chairman of the CAB, Col Baron Wahis, arrived in D.H.60M OO-AKM at 1810hr, with Maurice de Limelette, who co-owned it with his brother, at the controls.

The last of the British aircraft to attend arrived at 1812hr, when Lionel Balfour of the Hanworth Aero Club and his sister Rachel landed in the former's Avro Avian II, G-EBSD. Renowned French aviator Ludovic Arrachart was next in, parking up and hopping out of Caudron 193 F-AJSH to reveal a dashing pair of plus-fours. The Antwerp Aviation Club was represented further by *Messieurs* Bosyns and Van Dessel in RSV 18/100 OO-AKG, and, after the arrival of

Heren Van den Wall and Jeunejean of the Dutch *Nationale Luchtvaartschool*, more Frenchmen arrived in the form of *Messieurs* Joly and Marot in a Hanriot HD.14 of the *Aéro Club de l'Aube* at 1830hr. The final arrival was the Comte Jacques d'Ursel of the CAB in Orta Saint-Hubert G.1 OO-AKY at 1855hr.

By the end of the day some 26 aircraft were ranged across the airfield at the château, 16 of which were Belgian, four British, four French and two Dutch. With all aviators accounted for, operations shifted to the château itself, where dinner was served at 2100hr. According to Billy Prinxtion's report for *La Conquête de l'Air*, "the evening was extremely animated, with dancing well into the small hours".

## AU REVOIR

The following morning dawned bright and clear, and many of the attendees took to automobiles to investigate the surrounding countryside more fully. Georges Hanet made his Puss Moth available for pleasure flights around the locality, taking a total of some 20 people flying over the course of the morning, many of them enjoying their first "hands-on" experience of aviation.

At 1300hr a banquet was held for all the rally's participants, and, after a generous lunch, Louis Fiorellino took the floor to congratulate the pilots and their passengers, the groundcrew

**Continued on page 31**



**ABOVE** Lambert Keyenbergh poses beside the elephant motif on the cowling of his RSV 32/90, OO-AJD. Having married the daughter of a wealthy colonial wares importer (hence the elephant), Keyenbergh, a keen aviator since the early 1920s, spent much of his wife's fortune on aviation, drink and women, and died penniless after the war.



**ABOVE** One of two Dutch aircraft to participate in the August "Weekend Aérien" at the château was the sole Koolhoven FK-42, PH-AGO, flown in by its designer, Frederick Koolhoven, seen here beside the parasol-wing two-seat trainer with his wife. No sales of the aircraft were made and this one-off prototype crashed in July 1932.





**ABOVE** Arriving at the château at 1710hr were Messieurs Maréchal (left) and Robert Van de Velde of the CAB in Orta Saint-Hubert G.1 OO-ALL. On October 19, 1932, the parasol-winged machine departed for a flight to Tehran in Persia (Iran), where it arrived on November 12. By July 1933 it was reported as having been destroyed in Persia.



**ABOVE** Some of the visitors enjoy their “vin d’honneur” at the reception tent at the château’s airfield on August 30. Standing left to right: Mme Coomans; Mme Smeyers; Mme Cocquyt; Jean Coomans; unknown; unknown; Mary Dashwood Wilson (who died in Camberwell Lunatic Asylum in 1939); Francis Fisher and Mme and M Koolhoven.



**ABOVE** Although unconfirmed, it is likely that this is de Havilland D.H.60M OO-AKM, co-owned by Albert and Maurice de Limelette and one of only two Moths registered in Belgium at the time of the second rally. Maurice flew Col Baron Wahis (Chairman of the CAB, seen here on the left) to the airfield, hence the likelihood of it being 'AKM.



**ABOVE** Representing the Antwerp Aviation Club were Messieurs Bosyns and Van Dessel, who arrived in the early evening in RSV 18/100 OO-AKG. Powered by a 100 h.p. Renard engine, this aircraft was flown by Jean Stampe to first place in the Concours National d'Avions de Tourisme in June 1929, while still only certificated for testing.





**ABOVE** Messieurs A. Joly and C. Marot of the Aéro Club de l'Aube at Troyes in the Champagne-Ardennes region of France were the penultimate visitors to arrive, which they did at 1830hr in this unidentified Hanriot HD.14. The club was one of the oldest flying organisations in France, having affiliated with the Aéro Club de France in 1901.



**ABOVE** Powered by an 85 h.p. five-cylinder Walter Vega engine, Orta Saint-Hubert G.1 OO-AKY of the CAB was flown to the rally by Comte Jacques d'Ursel, seen here beside the machine. The three-seat G.1 was designed by Jef Guldentops for Jose Orta Construtions et Réparations Aéronautiques, based at Saint-Hubert in Wallonia.

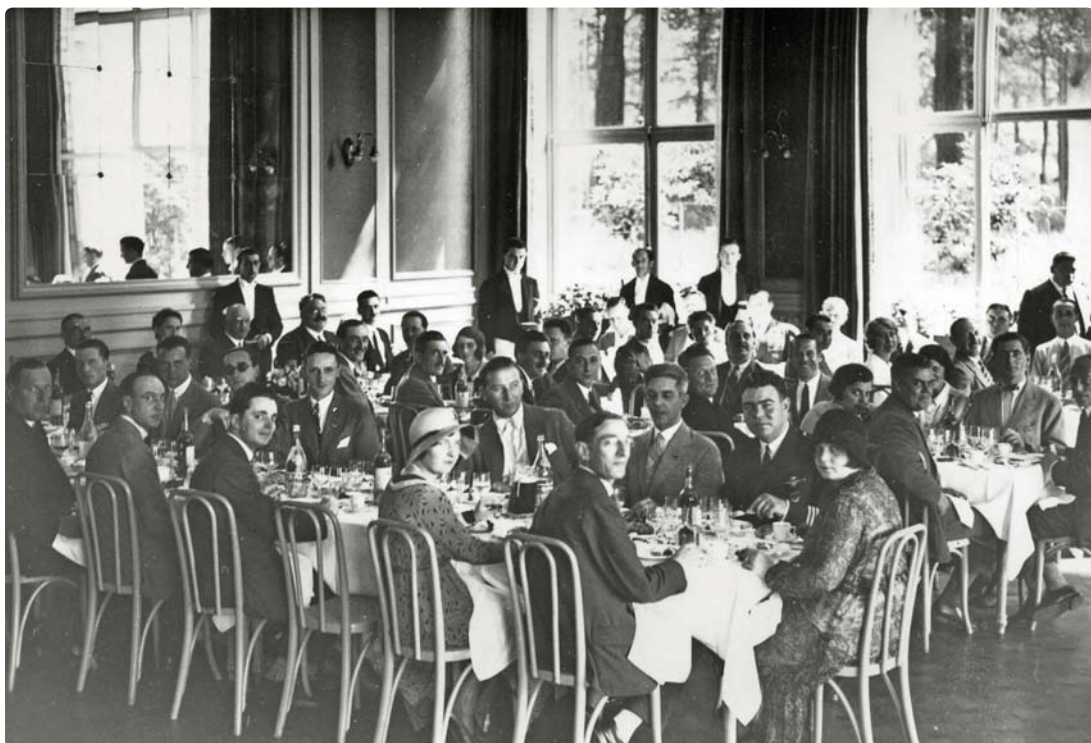


**ABOVE** “Teddy” Franchomme, who supplied Hawker test pilot George Bulman with the photographs presented here, stands on the left beside the CAB’s Hanriot HD.14 OO-ALA, named Mickey Mouse, as seen on the cowling. The three HD.14s placed on the Belgian register were all operated by the CAB and were all probably ex-military.



**ABOVE** Lionel Balfour and his sister Rachel pose beside Avro Avian II G-EBSD in the airfield in the grounds of the château. Lionel went on to become a Director of Portsmouth, Southsea & Isle of Wight Aviation, which provided a highly successful pre-war air ferry service between Portsmouth and Ryde using Airspeed and Monospar aircraft.





**ABOVE** The visitors enjoy the banquet laid on at the château on the Sunday of the August 1930 rally. The château continued to be a focal point for Europe's private flyers, as local farmer Henri Daubois, who was six years old in 1930, recalls: "The British would come with their aircraft, drink tea, play a round of golf and fly back to Britain".

Continued from page 25

members who had worked hard to make the rally such a success and the members of the press who had turned out to cover the event. He then presented Col Baron Wahis with a splendid trophy, sponsored by the CIGHE, as Chairman of the club which, unsurprisingly, had fielded the greatest number of machines. Wahis accepted with thanks, expressing his honour at being presented such a trophy from one of France's most distinguished pioneer aviators.

With the ceremony over, only farewells remained and the tourists returned to the airfield to make their departures. As Prinxtton related: "The small machines flew off one by one, as if reluctantly". The big W.8 embarked its passengers and lumbered off across the field, setting course for Brussels once clear of the surrounding trees.

Aerial rallies continued to be held at the château over the next few years, with the opening of a miniature golf course providing a good reason to hold the third rally on the weekend of May 30–31, 1931. Many of the same aviators seen at the previous year's aerial events attended, with, unsurprisingly, another strong showing from the Belgians. A fourth rally was held in August 1931, but the weather was less accommodating and attendance was poor. The following year the rally was held during June

4–6, with a record 31 participants attending. The château continued to be a regular destination for light aircraft during the 1930s, the rallies being a highlight of the European flying season.

With the German invasion of the Low Countries in the spring of 1940, the château was overrun, the Luftwaffe landing five small aircraft (types unknown) at the airfield. The Reich Minister for Foreign Affairs, Joachim von Ribbentrop, stayed at the castle during June 1940, and from August 1941 it was used as a retreat for German soldiers. The château was liberated by the US Army in late 1944, and, although an aircraft was landed at the airfield after the war as a trial, it was decided to return the land to agriculture.

The CIGHE continued to operate the château as a resort until 1950, when it was finally closed. Unfortunately most of the castle was destroyed by fire in 1968, and its remains were demolished in 1970. Only the *Tour Léopold* (Léopold Tower) still remains; it serves as a clubhouse for the *Royal Golf Club du Château Royal d'Ardenne*, perhaps echoing the bonhomie of the château's golden aerial rally years.



**ACKNOWLEDGMENTS** The Editor would like to thank the late John Havers, Richard and Bettina Havers, Julian Temple, Frans Van Humbeek and Luc Wittermans for their invaluable help with the preparation of this article



# NATIONAL TREASURE?

## THE SEA FURIES THAT GOT AWAY: RNAS LOSSIEMOUTH, 1962

By the turn of the 1960s the epitome of the British single piston-engined fighter, the Hawker Sea Fury, had long since left frontline service, with numerous examples left in the open at remote airfields to await their fates. Hearing of their imminent demise, **GRAHAM SKILLEN** dashed up to Scotland in April 1962 to capture a record of those that were soon to fall victim to the scrapman's torch — and a few that didn't





**M**OST PEOPLE WOULD cross the street to look at a Hawker Sea Fury. Today you have to travel a bit further but whether it is Yeovilton in the UK or Reno, Nevada, seeing a Sea Fury is a distinct possibility. In recent years a fair few examples of the mighty British post-war naval fighter have been gathered up around the world and put back into the air, usually at enormous expense, for us to marvel at. Enjoying, as one does, 20/20 hindsight, it is heartbreaking to realise that there were more than a few Sea Furies in the past that were readily “available”, and might have been rescued to live again.

#### **A PILGRIMAGE NORTH OF THE BORDER**

Back in the early 1960s the enthusiast tom-toms were advertising the fact that a substantial collection of Sea Furies was to be seen at RNAS Lossiemouth (*HMS Fulmar*), near Elgin in Scotland, but with the caveat that by the time you get there they may be gone. Thus motivated, in April 1962

**OPPOSITE PAGE, TOP** Still maintaining the type's purposeful stance despite its somewhat battered appearance, Hawker Sea Fury FB.11 TF968 stands in the heather at Lossiemouth on April 13, 1962. This veteran of the Korean conflict was struck off charge and scrapped in 1963.

**OPPOSITE PAGE, BOTTOM** The line-up of 16 Sea Furies left outside to brave the elements at Lossiemouth, some from as far back as 1957. What price such a potential treasure-trove today?

**ABOVE** With wings folded and canopies open, the Sea Furies quickly began to deteriorate in the North Sea air. Four of the examples stored outside — VR936, VW583, WE728 and WJ224 — and all of those stored in the hangar had operated with the Fleet Requirements Unit at Hurn during 1955–60, serving as “high-speed targets” for Royal Navy ships.



**ABOVE** Sea Fury FB.11 WJ296 was one of several at Lossiemouth which had already had its distinctive Rotol five-bladed propeller removed when the author visited. It had accrued a mere 54hr 50min flying time when it arrived at Lossiemouth in July 1957 for long-term storage. It was sold to local scrap dealer David Bond & Co in June 1963.

I set off with a friend to check them out. There was no air display, no supporting event, just these aircraft sitting in the heather with their cockpits open, with the rain coming in and the North Sea wind buffeting and whistling between them.

In my experience the Royal Navy has always been a most hospitable organisation, so with the necessary permissions we were turned loose on a mouth-watering line-up of 16 Sea Fury FB.11s and shown around the hangars where a further six resided. It is possible to argue that once you've seen one, you've seen them all — but there's so much more to it than that. I was never able to see these magnificent aircraft on the line, so to catch them at the very end of their careers was the best I could hope for; to see them in quantity, something that is unlikely ever to happen again, represented, for me, real quality.

Lossiemouth was not unique in this respect at that time, as the Sea Fury was still an active type with its manufacturer, and peering through the fence at Hawker's factory at Dunsfold in Surrey one could see a distant selection. But Lossiemouth was the place to get up really close and personal; you could clamber into all the cockpits and just . . . imagine. The helpful rating in charge of our visit offered us a few compass-correction cards from the cockpits as souvenirs, from which it could be gleaned that the aircraft last saw active service around 1957–59. Alas, their compasses would never again be swung.

The aircraft in outside storage were TF968, TF970, VR936, VW583, VW586, VX660, VX683, VX694, VX708, WE683, WE728, WG601, WJ224, WJ237, WJ295 and WJ296, some of which bore



**The compass cards given to the author as souvenirs by an obliging serviceman during the former's pilgrimage to Lossiemouth in 1962.**

the codes of the Fleet Requirements Unit (FRU) at Hurn, their last posting. I have no idea of what the scrap value of these aircraft was at the time, but one can be certain that it wasn't much, and by the end of 1963 they were all to be found in the Lasham scrapyards in small pieces.

Faring rather better were the aircraft stored inside — VR930, VX653, WE709, WG599, WJ244 and WJ288 — all of which lived to fly again in various parts of the world, with some still airworthy today. So now the warm purr of a Bristol Centaurus sleeve-valve engine is quite sufficient to remind me of my pilgrimage to see the late, lamented Lossie Sea Furies — the ones that got away.





**TOP** As all the Sea Furies stored outside were to be scrapped, it is curious that VW586 has had its standard Fleet Air Arm scheme of Extra Dark Sea Grey upper surfaces and Sky undersides removed, although the outer panels of the wings have retained their original underside colour, along with roundels and serials.

**ABOVE** Having accrued nearly 838 flying hours, all in the UK, since entering FAA service in 1950, VX683 was one of the more weary Sea Furies and had been at Lossiemouth since October 1957.

**LEFT** The final ignominious end for the majority of the Sea Furies photographed by the author at Lossiemouth in April 1962 — the Staravia Ltd scrapyard at Lasham in Hampshire. Seen here are the empennages of VX694 (total flying hours 347hr 40min) and TF968 (324hr 30min).

# Defending the Reich

## Part 2: "If something looked hopeful..."

Continuing his three-part series on the wartime activities of specialist Luftwaffe unit *Erprobungskommando* 25, tasked with developing methods to counter the Mighty Eighth's relentless daylight bombing of the Fatherland, **ROBERT FORSYTH** details the unit's exploration and development of artificial air squalls, cable-bombs and "fire-clouds"



**A**S RELATED IN *Defending The Reich* — Part 1: *Rockets, Stovepipes and "The Crab Device"* in *TAH17*, Luftwaffe unit *Erprobungskommando* 25 (E.Kdo 25 — Test Command 25) was formed during the spring of 1943 at Wittmundhafen specifically to devise and assess experimental aerial weaponry intended to combat USAAF four-engined bombers which, from that time, were engaged in an increasingly intensive daylight strategic air campaign against the Third Reich.

According to *Hauptmann* Horst Geyer, former commander of the unit, "E.Kdo 25's main brief was to develop and test new, effective weapons with which to bring down heavy bombers. We tried many things, but the ideas did not always originate from within. We received many letters and proposals from civilians, from companies and manufacturers, from other branches of the armed services and also from the Luftwaffe testing centre at Rechlin; 'Why don't you try this, or that?' and so on.

"All suggestions were investigated and if something looked hopeful, then we proceeded with trials. We were basically free to do what we liked, buy what we liked, design what we liked and test what we liked. But it fell to me to report everything to *Generalleutnant* [Adolf] Galland, *General der Jagdflieger* [Commanding General of Fighter Forces], and the *Erprobungsstelle* [Test Establishment] at Rechlin."

Nothing was considered too imaginative, bizarre or beyond consideration. One radical suggestion came from Dr Wendland of the design







**LEFT** Adolf Galland (far left) confers with Oblt Franz Frodl of E.Kdo 25 at Achmer in November 1943. Horst Geyer is second from right, and beside Galland is Hans-Günther von Kornatzki, CO of Sturmstaffel 1, the Fw 190s of which would have been fitted with the weapons devised and tested by E.Kdo 25.



Three of the 127 Boeing B-17Gs of the 614th Bombardment Squadron, 401st Bombardment Group, sent from Deenethorpe to bomb oil refineries at Molbis, near Leipzig, on March 17, 1945. Nearest the camera is serial 42-102468, coded IW-S, which completed some 106 missions over Europe. Erprobungskommando 25 was established specifically to find effective ways of disrupting such formations and destroying the USAAF's devastating bombing capability.



*Focke-Wulf Fw 190A-5 WNr 181729, "White 42", as operated by E.Kdo 25 at Achmer, near Osnabrück, in the early summer of 1943. Note the W.Gr.21 mortar tube attached to the underside of the wing, as covered in the first part of this series. The camouflage finish is RLM 74 Graugrün and RLM 75 Grauviolett over RLM 76 Lichtblau, with a black flash with thin white edging applied over the exhaust area. Artwork by TOM TULLIS © 2017*

department at the Focke-Wulf aircraft company at Bad Eilsen, on March 8, 1944, in which he proposed to destroy enemy bomber formations by means of artificially-generated gusts or squalls of air. These were to be created by the "combustion of fuels in the atmosphere". Wendland envisaged replicating the levels of natural energy contained in the "storm clouds of nature" — around 6.5kcal to 1kg of air — which created updraughts of speeds of more than 25m/sec (82ft/sec). If combustion could occur without excess air, enormous energy — up to 680kcal to 1kg of air — could be produced. Wendland proposed producing such energy by blasting volatile explosive fuels directly into the atmosphere from specially designed external tanks, one of which he proposed fitting to a Junkers Ju 88, or smaller versions under each wing of a Focke-Wulf Fw 190.

According to Wendland, "the ignition of such fuels in the atmosphere would produce updraughts of tremendous strength. Aircraft which have less resistance to gust, for example bombers, would suffer extreme flows of wind on their wings, of sufficient strength to cause rupture of the airframe". However imaginative Wendland's proposal may have been, it did not progress beyond report stage.

Other ideas did. Between June 1943 and August 1944 E.Kdo 25 tested a range of special weapons including towed bombs, cable-bombs and the mounting of batteries of upward-firing 21cm mortars into a Heinkel He 177 bomber. In February 1944, following a proposal from Oberst Edgar Petersen, *Kommandeur der Erprobungsstellen*, and from a member of E.Kdo 25, the spraying of fouling chemicals into engines and on to windscreens was explored. The latter proposal became the subject of much debate and examination; and to this end, a salvaged engine from a downed USAAF bomber was sent to the chemical firm of I.G. Farben, which was instructed to conduct experiments with prospective chemicals. Geyer recalls:

"One member of the unit had contacts with the I.G. Farben company and he worked with them on trials designed to clog up an aircraft engine using certain chemicals; but they found that the quantity of chemicals needed to 'kill' one engine was too great; to have brought down a four-engined bomber would have been impossible."

### **Ozone bombs and Plexiglas killers**

Indeed, by June 1944 Geyer had noted that all efforts in this direction had so far proved unsuccessful. The Kommando also consulted Dr von Harz of the research laboratories at the chemical and weapons company Dynamit Nobel AG in Troisdorf. The doctor advised the officers of E.Kdo 25 that the agents available did not possess sufficient energy to destroy an engine. It had been suggested that the use of ozone (a powerful naturally occurring oxidant formed in the earth's atmosphere) could damage the engines of enemy aircraft, but Geyer conceded that harvesting ozone was extremely difficult; and that, in any case, there were no devices available to carry and spray the required quantities of the substance, other than at the *Deutsche Versuchsanstalt für Luftfahrt* (DVL — German Research Institute for Aviation) at Berlin-Adlershof, where he recommended any further testing should be undertaken.

Geyer further recalled that "tests were also carried out at Rechlin with chemicals designed to spray over cockpit and gun turret Plexiglas — to adhere to it and to mask it but not, necessarily, to destroy it. Civilian laboratory researchers analysed fragments of windshields from shot-down [Boeing] B-17s and [Consolidated] B-24s in an effort to determine the manufactured composition of the Plexiglas. They subsequently developed certain types of chemicals in liquid and powdered form which could be dispersed over the glass. Rechlin then asked us to conduct trials using an Fw 190 and we found that, depending on which kind of chemicals were being used, it was not necessary to use large quantities".



## The spray-nozzle droptank

*Based on an original German document, this sketch shows the basic configuration of a spray-nozzle droptank, which could contain volatile explosive fuels or Plexiglas-dulling chemicals which would be sprayed into oncoming bomber formations.*

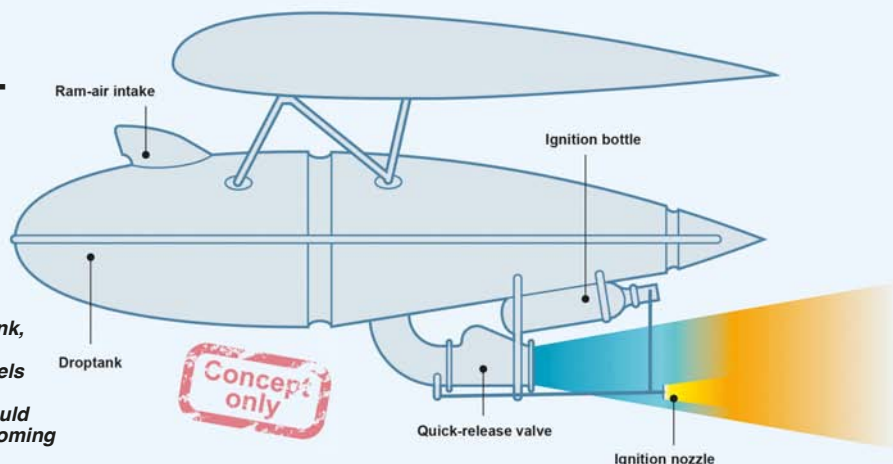


ILLUSTRATION BY IAN BOTT / WWW.IANBOTTILLUSTRATION.CO.UK

Geyer recalls a group of chemists visiting the airfield one day to deliver a sample of one such “white liquid”, which was duly sprayed over a large piece of Plexiglas. He explains:

“As soon as the liquid hit the glass, you ‘went blind’ — you couldn’t see anything in front of you. But I wasn’t sure about it and I sent a report to Galland, warning him that, if necessary, American bomber crews would attempt to break their windshields if they were sprayed, thus nullifying the effect. Galland understood what I was saying. But Goering also grew worried about the idea and instructed Galland not to pursue it, as he was concerned that the enemy would employ the same methods against us”.

Geyer does remember one Fw 190 being fitted with underwing tanks with valves designed to eject a chemical spray. The valves were of an open-or-shut, one-use only, jettisonable type and were intended to be used during a head-on attack against an enemy bomber formation. The Fw 190 would make a standard approach using cannon and pass over the formation with the pilot opening the valves of the tanks to spray the American aircraft. No such operations were ever performed, however.

## The original drag-and-drop

Another concept developed at Rechlin came in the form of towed bombs. Experiments commenced in August 1943 using a Heinkel He 111 to tow box- and ring-ended SC10 10kg (22lb) bombs through the air. Trials were conducted over open moorland using steel cable of 2.5mm (0.1in)-diameter with a length of 60m (200ft), trailing down to 21.5m (70ft), the Heinkel flying at a speed of 350km/h (215 m.p.h.).

A second test was made with high-tensile-strength carbon-steel piano wire of 1mm (0.04in)-diameter, 100m (330ft) in length, trailing to 25.5–32.5m (84–106ft). In order to prevent the trailing bomb from striking the fuselage or tail of the carrier aircraft during the first test on August 24,

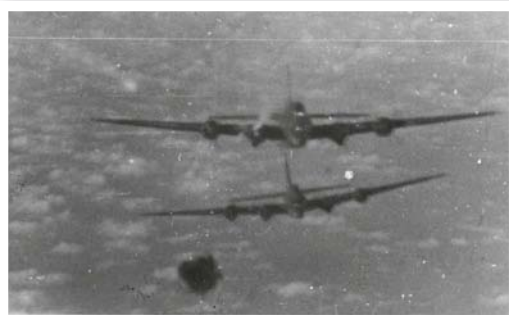


**ABOVE** Franz Frodl shows a selection of trial cable bombs and weights to a group of officers, including Oberst Johannes Trautloft (third from left), former Kommodore of fighter unit JG 54 and soon to be appointed Inspekteur der Tagjäger (Inspector of Day Fighters), during a visit to Achmer in November 1943.

1943, the Heinkel flew at 240km/h (150 m.p.h.), and the practice bomb was fitted to steel cable and at first fed out from the fuselage manually to a length of 2m (6ft 6in). This “proceeded flawlessly”, and after some further observation the cable was unspooled to a length of 60m. Again, there were no problems, and the cable was reeled back into the aircraft by hand.

Subsequent experiments were conducted

AUTHORS COLLECTION



AUTHOR'S COLLECTION

**LEFT** These two gun-camera stills from an Fw 190 capture the outer starboard engine of a USAAF B-17 exploding during a frontal attack. By 1943 E.Kdo 25 was investigating and testing the use of various types of cable bomb and detonating cord for deployment against the "Viermots". It was hoped that such items would cause havoc among enemy bomber formations.

using piano wire. It was found that when the aircraft changed course, the wire at first swung erratically, but after 5–10sec of continued flight it straightened again. The recovery and reeling back of the practice bomb to the aircraft went without problems at speeds up to 220–250km/h (137–155 m.p.h.), except on one occasion when the bomb was caught in the slipstream of the port engine, flailing in the air some 20m (65ft) from it and only narrowly avoiding striking the aircraft.

In other tests with piano wire the bomb was suspended to a length of 200m before it was judged to be "still". But after a few seconds the cable swung to one side, before swinging out into ever-increasing arcs until there was a continuous circling motion covering an area some 50–70m (165–230ft) in diameter. At this point, the wire was cut and the bomb fell on to the moorland.

By the end of August 1943, despite the erratic and hazardous nature of these initial experiments, there was sufficient belief in the principle of towed bombs to develop an automatic reeling and cutting device based on a cable drum for installation within a carrier aircraft. In late September 1943, however, the Erprobungsstelle at Rechlin delivered an experimental 10kg (22lb) "sharpened-cable bomb" to E.Kdo 25 for fitting to an Fw 190, with the objective of deploying such a weapon against American bomber formations. Rechlin had originally tested the 2.5mm (0.1in)-diameter twisted-steel-cable bomb with a view to using it against high-tension electric power cables and telephone lines in enemy territory but,

in an echo of Goering's concerns over the use of chemical sprays, such plans were abandoned when the Oberkommando der Luftwaffe (OKL — Air Force High Command) voiced concern that the appearance of German aircraft in the sky trailing sharpened steel cables could incite the enemy to adopt similar measures over Germany.

Curiously, it was representatives from the German Police & Postal Ministry who suggested that the cable offered an opportunity for aerial deployment. They envisioned cables being dragged into enemy bomber formations and dropped on to bomber engines. To this end, the Erprobungsstelle also furnished E.Kdo 25 with the salvaged wing section of a B-24 Liberator on which it could conduct ground tests.

The technical personnel of the unit devised a means by which a cable of 100–400m (330–1,300ft) in length could be stowed in a specially adapted cylindrical metal container, with the 10kg "bomb" — effectively just a weight added to the end of the cable to provide momentum — left outside the casing. The whole apparatus was then attached to a fuselage-mounted ETC 50 bomb rack.

Geyer recalls: "At first we undertook tests with a very small 'bomb' — about the size of a man's fist, with no charge or blast — attached to a length of 400m 2–3mm [0.08–0.12in]-diameter twisted-steel cable, which was extremely sharp. You could easily cut your hand on it".

It was planned to approach an enemy formation from the front and about 500m (1,600ft) above. The "bomb" would be freed on impact with a bomber by means of a weak link in the cable and the container would be jettisoned. The fighter would then exit flat over the bombers and subsequently be available to operate in a conventional role. One limitation was the fact that once the cable had been released, it could not be reeled in again; so, if a release were made in error, the cable might have to be dropped into friendly territory.

## Into action

Having moved to Achmer, E.Kdo 25 conducted further tests with the sharpened-cable bomb, with Horst Geyer flying several trial flights against the wing of the Liberator in order to assess the damage the cable would inflict. These tests proved disappointing, as Geyer recalls:

"Some tests were made with a weight and others without, but approach and correction became very difficult. The wing of the old B-24

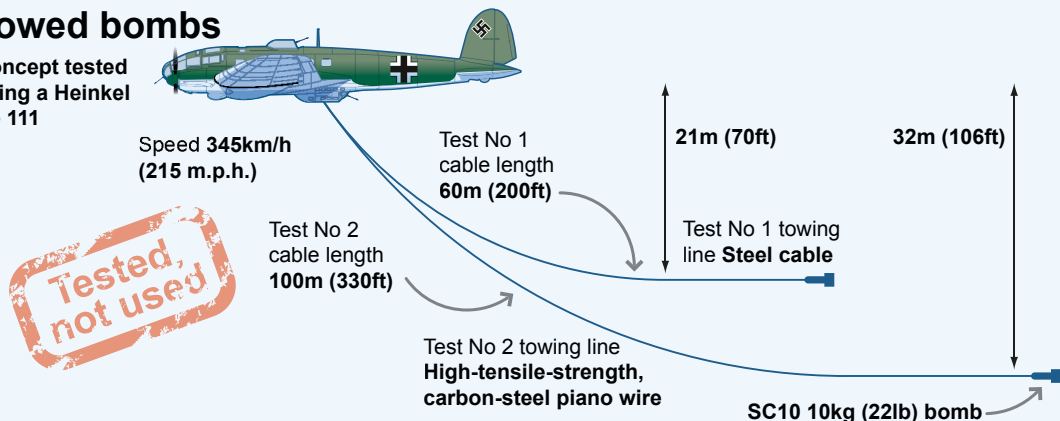


# From cable bombs to fire-clouds

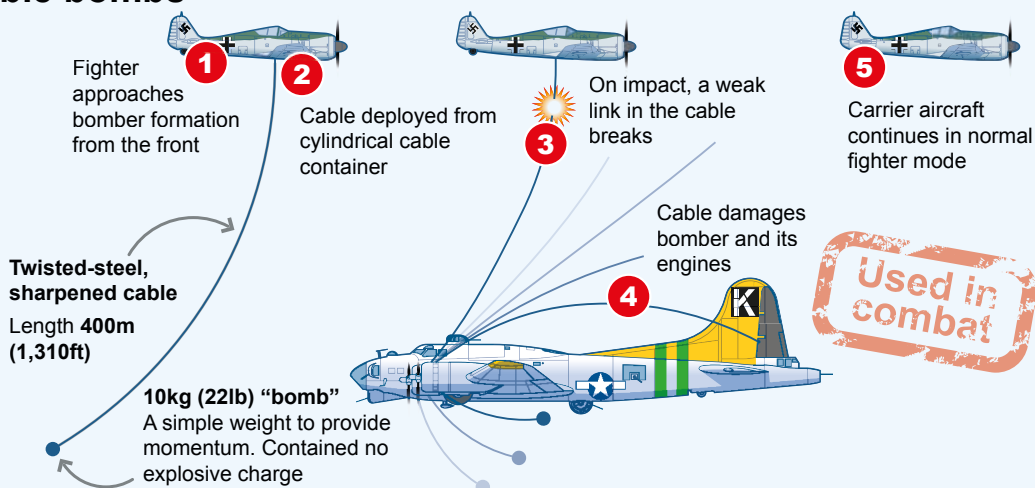
Concepts for aircraft-towed weapons conceived for the Luftwaffe, to be tested by E.Kdo 25

## Towed bombs

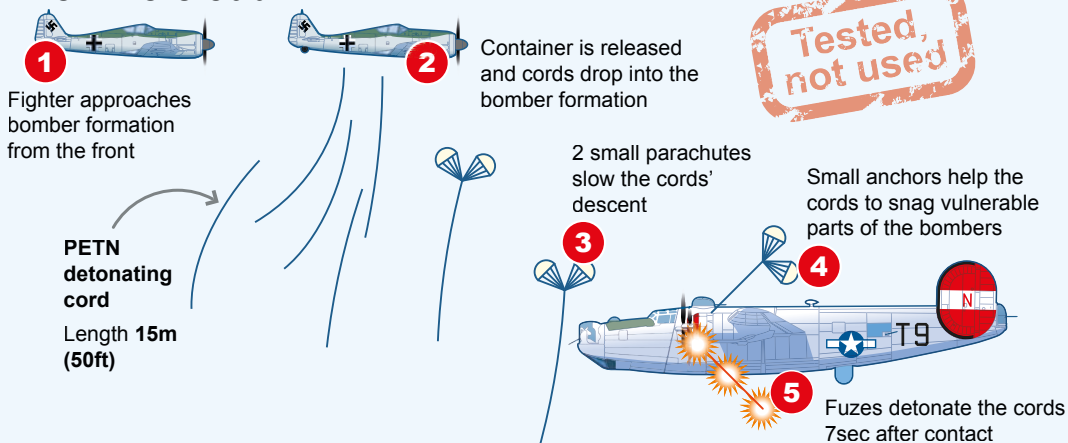
Concept tested using a Heinkel He 111



## Cable bombs



## The "fire-cloud"



Graphic: Ian Bott [www.ianbottillustration.co.uk](http://www.ianbottillustration.co.uk)



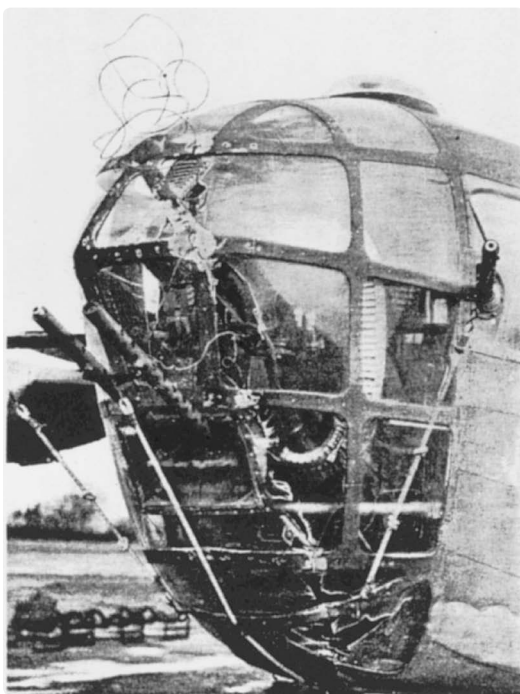
**ABOVE** Another photograph taken during Johannes Trautloft's visit to Achmer in November 1943. Seen second from left in this picture is Oberstleutnant Edu Neumann, who had led fighter unit JG 27 in North Africa and the Mediterranean before being appointed to the staff of the General der Jagdflieger.

**RIGHT** Steel cable tangled around the nose of a Consolidated B-24 of the 44th Bombardment Group on its return to its base at RAF Shipdham in Norfolk from a raid on Emden on December 11, 1943. The cable was probably dropped from an aircraft belonging to E.Kdo. 25. The bombardier and navigator aboard the Liberator were injured but the aircraft was still flyable.

was placed on a specially-constructed wooden cradle. I flew several trials against [it] in an Fw 190 to assess the damage inflicted, but the cable just kept swinging about and didn't hit the target.

"The 400m cable was carried in a cylindrical container beneath the Focke-Wulf's fuselage and was opened at a height of 500m on the approach to the target. The bomb came free on impact with the target and the cable was released later while over open countryside. The device was made so that it could be fitted to virtually any aircraft."

Undaunted by the results of the trials, E.Kdo 25 reported the weapon operationally ready in the first half of October 1943. There it seems further work stopped until December 11 that year, when the US Eighth Air Force despatched 437 B-17s and 86 B-24s to bomb aircraft-industry targets at Emden under strong fighter escort. As the B-24s of the 44th Bombardment Group approached the target, an Fw 190 trailing a length of steel cable "with a weighted object on the end" was seen to make a head-on approach towards the formation, followed by a shallow dive from slightly above.



The German fighter was then seen to release the cable which impacted with a B-24, entwining itself around the bomber's nose. The cable injured the bombardier and the navigator. Shortly after this attack, the Liberator's starboard bomb-bay door blew in and was torn away in the slipstream. American technical personnel later assumed this was as a result of the cable weight smacking against the aircraft.





PHILIP JARRETT COLLECTION

The B-24 was able to return to base and the cable was removed and taken away for scientific analysis. This showed the cable to have been 3.8mm (0.15in) in diameter and made up of five wires wound around a single core wire. The individual wires were square (1.2mm/0.05in side) and the pitch on the outside wires approximately 19mm (0.75in). Chemical analysis tests showed the wire to contain the following elements: carbon 0.55 per cent; manganese 0.5 per cent; silicon 0.2 per cent; nickel, less than 0.01 per cent; sulphur 0.034 per cent; chromium 0.1 per cent; phosphorus 0.031 per cent; molybdenum, not found. Two days after the raid on Emden, German radio broadcasts proclaimed that this new weapon had been used against the American formations "with devastating effect".

The Eighth Air Force reported sightings of Fw 190s and Ju 88s trailing cables through bomber formations on at least three more occasions in December 1943 and January 1944 during raids on Bremen and Oschersleben. However, USAAF Intelligence was not perturbed and reported:

"The conclusion to be reached after a study of reports is that although the attacks with cable bombs are becoming more frequent, they are not particularly dangerous. Even though large bombs may be carried, the question of aiming them restricts their effectiveness; plus the fact that aircraft trailing these cables must come into range of the bombers' guns, thereby making themselves very vulnerable targets. Even when the bombs reach their target, their effectiveness, so far as is known from the single attack in which a 'plane was hit, is relatively light.

"The restriction of aiming, vulnerability of

**ABOVE** With bomb doors open in preparation for their arrival over Koblenz, the target of the day, B-17Gs of the 401st BG maintain a tight bombing pattern. The distinctive white "Mickey" radar housing that replaced the ball-turret on "pathfinder" B-17s to accommodate the American H2X radar system is just visible on the nearest B-17, serial 44-8153 of the 612th BS.

carrier aircraft and limiting of its manoeuvrability seem to indicate that at present, the bomb-on-cable tactic will not be a successful counter-measure against Allied bomber formations."

After mid-January 1944 further experiments were indeed stopped, although theoretical proposals for cable-bombs were still being drawn up by the DVL at Adlershof in March of that year, when Dr-Ing Ulrich Schmieschek proposed using Messerschmitt Bf 109 fighters equipped with steel cables of 1,000m (3,300ft) in length carrying 50kg (110lb) or even 200kg (440lb) bombs for use against enemy formations. The bombs were to be ignited electrically by the pilot at the optimum moment of approach towards a *Pulk* (formation of bombers).

In September 1944 Dr-Ing Walter Wundes of the Gothaer Waggonfabrik of Gotha put forward a proposal for a method to destroy an enemy bomber by means of "a bomb towed on the end of a wire cable towards the path of an oncoming enemy aircraft. Upon the impact of the enemy bomber with the cable, the explosive charge would be forced by its momentum towards the bomber and explode. The wire cable would be released from the tow aircraft at the moment the enemy aircraft makes contact with the cable".

Questioned after the war, Adolf Galland stated that two unconfirmed victories had been claimed

Generalleutnant Adolf Galland, commander of the Luftwaffe, inspects a line-up of Messerschmitt Me 410s of E.Kdo 25 at Achmer in November 1943. The aircraft nearest the camera is fitted with a 37mm Flak 18 cannon, which the unit was then evaluating as a potential weapon against daylight bomber formations.

AUTHOR'S COLLECTION



using cable-bombs. However, experiments had been stopped because “the bombs tended to trail behind the Fw 190 rather than hang down, because the bomb swung about too much and because the fighter aircraft had to come very close to the bombers to achieve victories”.

The dropping of steel nets was also considered, but never adopted. Geyer believed that the weight of such nets would have slowed the carrying aircraft down considerably and made it an easy target for enemy escort fighters.

### The fire-cloud

As a variation upon a theme, another idea tested by the Kommando during the summer of 1944 was the use of *Nitropentaschnur*, or 15m (50ft)-long strips of detonating cord, which were to be dropped on enemy formations in clusters. More widely known as PETN cord (a modern US Marine Corps version of which is seen **ABOVE RIGHT**), *Nitropentaschnur* was made from Pentaerythritol tetranitrate. This form of explosive compound, similar to nitroglycerin, was first manufactured in 1894 by the Rheinisch-Westfälische Sprengstoff AG of Cologne, with production commencing in 1912. It saw use by German forces during the First World War, and during the Second formed a component in ammunition used in the Luftwaffe's MG FF/M series of cannon, as well as in the *Minengeschoß* high-explosive shell.

The rear fuselages of a small number of E.Kdo



USMC

25's Fw 190s were fitted with specially designed containers manufactured by the Max Baermann engineering firm at Köln-Dollbrück. These containers could carry 20 lengths of 15m-long cord. The plan was that a frontal approach would be made against a bomber Pulk, and as the fighter passed through the enemy formation, the container would be released and the cords would drop down on to the bombers, the flight of each piece of cord being arrested by two small parachutes. They would either become wrapped around propellers or strike the metal of the enemy machines to hook and embed themselves into their panels with the aid of small sharp-clawed





"anchors". The fuzes were set to detonate 7sec after contact with an enemy aircraft.

Initial test flights against static targets on the ground demonstrated flawless opening of the containers and discharge of the Nitropentaschnur cord, but it was also found that the fuze delay was too short and it was recommended that the period be extended to 20sec. Furthermore, it was believed that a load of 20 cords would be insufficient and would have little effect, simply scattering harmlessly through an enemy formation. In cases where the anchors managed to embed themselves in the metal of the static test targets, it was observed that while the outer metal skin was punctured, the cord had failed to entwine itself around any parts and thus would fail to detonate.

In March 1944 E.Kdo 25 had transferred to Parchim, and during the ensuing summer underwent changes in structure. In June the unit's *Kampfstaffel* (bomber squadron) moved to Tarnowitz briefly, before moving again to Finow. At the end of July, Horst Geyer was reassigned to take command of E.Kdo 262, the Me 262 test and evaluation unit at Lechfeld, while E.Kdo 25 was redesignated *Jagdgruppe 10* (Fighter Group 10) and placed under the command of Major Georg Christl, a holder of the Knight's Cross and former commander of *Zerstörergruppe III./ZG 26*.

In September 1944 Christl noted that "further experiments with Nitropentaschnur has revealed new factors. Dropping tests with 60m [195ft]-

**ABOVE** A perfect target for a Luftwaffe fighter armed with Nitropentaschnur, tested by E.Kdo 25 during the summer of 1944. The concept was to attack the bomber Pulk from the front and above, and drop lengths of hooked explosive cord into it; the cords would be slowed by parachutes and explode after attaching to the bombers with their clawed anchors.

long detonating cords [have proved] inconclusive owing to technical deficiencies with the parachute system. When the length of the cords is extended from 15m to 60m, the number of cords carried in the container has to be reduced from 20 to seven, thus meaning that the additional cords would have to be transferred to suspended external holders in a further development.

"Since the fundamental problem of looping the cord around aircraft components has still not been resolved . . . it does not seem promising to continue with further tests based on the [negligible] measure of success so far achieved."

But where attempts with cable-bombs and fire-clouds may have failed, in another experiment, a far more powerful, potent and advanced weapon was promising to inflict considerable damage on the USAAF's bombers . . .



**Next time:** E.Kdo 25's efforts to find effective ways of bringing down the ever-increasing waves of Allied bombers pummeling the Reich continue with the development of the Zellendusche system — an optically-controlled upward-firing cannon designed to rip into the bellies and wing fuel tanks of the enemy's "Viermots".

# THE SPECKLED TROUT FROM MOSES LAKE



*Boeing KC-135A serial 55-3126 was rolled out of the Boeing plant at Renton, Washington, on March 29, 1957, making its first flight on May 17 the same year. It was christened City of Moses Lake, where Boeing's flight test centre was located. On June 25, 1957, Boeing handed '3126 over to the USAF, and it departed for Wright-Patterson AFB in Ohio the following day.*

BOEING VIA AUTHOR



Boeing KC-135 specialist **ROBERT S. HOPKINS III** traces the history of one particular airframe, serial 55-3126, which was plucked from the USAF's test programme in 1957 by "Old Iron Pants" himself, General Curtis LeMay, who set several long-distance records in it to prove the advantages of a cutting-edge VIP transport in a fast-moving Cold War world





“ IF WE MAINTAIN  
OUR FAITH IN GOD,  
LOVE OF FREEDOM  
AND SUPERIOR  
GLOBAL AIR  
POWER, THE  
FUTURE LOOKS  
GOOD... ”

— General Curtis E. LeMay, 1956

**A**NY BIOGRAPHY OF General Curtis Emerson LeMay, the famous — and notoriously outspoken — air power advocate, is sure to include a variety of aircraft images. Perhaps one might be of Boeing B-17s overflying the Italian ocean liner *Rex* in 1938, demonstrating LeMay's skill as a navigator. Another may be of LeMay beside a group of B-29s based in the Marianas half a decade later, when the USAAF was mercilessly pounding Japan. Of course LeMay's tenure in the early 1950s as Strategic Air Command's colourful and demanding boss merits a B-52 photograph, complete with hydrogen bomb (and his ever-present cigar, of course). No specific examples of these types, however, are personally associated with “Old Iron Pants”, as LeMay was affectionately known by his troops. That distinction belongs to Boeing KC-135A serial 55-3126, the aircraft in which LeMay set a number of speed and distance records, and which flew politicians, generals, admirals and even a princess around the world. It also earned the enmity of critics who charged that it could be misused by LeMay and other military and political celebrities.

### THE NEED FOR SPEED

As Strategic Air Command's Commander-in-Chief (CINCSAC) from 1948, LeMay was required to travel extensively around the world for meetings, evaluations and official ceremonies. He effectively commuted between SAC Headquarters at Offutt Air Force Base (AFB) in Nebraska and Washington DC, where he would testify before Congress or meet with senior military and political officials to twist a few arms to gain more funding for SAC aircraft,

programmes and people. LeMay's time at SAC was drawn to a close in 1957 when President Dwight D. Eisenhower appointed him USAF Vice-Chief of Staff at the Pentagon. His travel schedule accordingly increased dramatically as his new responsibilities transcended SAC to cover every aspect of the USAF. Whether at Offutt or the Pentagon, LeMay initially flew in slow, ageing piston-powered transports built during, or based on designs from, the Second World War, including the Douglas C-54, Lockheed C-121 and Boeing C-97.

In the late 1950s jet-powered transports were a luxury usually reserved for heads of state. Eisenhower was to receive three factory-fresh Boeing 707s, and his counterpart in the Soviet Union, Nikita Khrushchev, made the most of any opportunity to impress the world with his Tupolev Tu-104 jetliner. As much as the jet transport projected prestige, it also provided speed. Naturally, LeMay and his Department of Defense colleagues believed they should similarly enjoy the benefits of jet travel, and he knew just where to look.

The KC-135A entered the USAF inventory on June 28, 1957, as SAC's new jet tanker, and several of the first aircraft off the assembly line were undergoing Phase VI functional development tests at Wright-Patterson AFB in Ohio. LeMay figured that the trials programme could do with one less testbed and requested that an example be sent to Washington DC. However, the folks at Wright-Patterson politely declined. Unaccustomed to hearing the word “no”, LeMay wielded the full weight of his four stars and soon had his aircraft when 55-3126, christened *City of Moses Lake* after its first flight in 1957, arrived at Andrews AFB in Maryland.



*With everything hanging down, '3126 taxis in at Ezeiza Airport in Buenos Aires, Argentina, following its southbound flight from Westover AFB during Operation Long Legs on November 11–12, 1957. The name City of Moses Lake had been removed by this time, and was probably only carried for a very short period until '3126 arrived at Wright-Patterson in June 1957.*

JOE BRUCH COLLECTION VIA AUTHOR



Less than a month later LeMay showed off his new jet on the global stage. Back in 1938 he had led a flight of B-17s to Argentina, using among other things a National Geographic map for navigation. In an update of that pre-war mission, LeMay established two world records while flying '3126 on a similar flight between the USA and Argentina during what was designated Operation *Long Legs*.

During the southbound flight in '3126 on November 11–12, 1957, LeMay and his crew established a world record non-stop flight distance of 6,322.45 miles (10,175km) from Westover AFB, Massachusetts, to Ezeiza Airport in Buenos Aires, Argentina (where LeMay is seen on his arrival, **RIGHT**). The flight, which included the addition of nearly 1,000 extra miles [1,600km] flying around the “hump” of Brazil, took 13hr 2min 51sec. On the northbound flight on November 13, LeMay and his crew set a new speed record over a recognised course from Buenos Aires to Washington DC's National Airport, averaging 471.45 m.p.h. (759km/h) over a distance of 5,204 miles (8,375km) in a total time of 11hr 3min 57.38sec.

## HEARTS AND MINDS

*Long Legs* captured America's attention as a major national event. The KC-135's circuitous route from Westover AFB to Buenos Aires had covered a distance greater than that from New York City to Moscow, where Russian leaders were jubilant over the launch into orbit a month earlier of Sputnik. LeMay's message was clear: the Russians may talk about satellites and ballistic missiles as being weapons of the future, but the USA showed that manned strategic aircraft were ready and capable of striking



BOEING VIA AUTHOR

the USSR *now*. Americans of all walks of life responded enthusiastically to the flight.

One housewife wrote that *Long Legs* “was like [Jimmy] Doolittle over Tokyo”. Another was so impressed by LeMay and his new jet-powered mount that she sent a telegram reading: “Congratulations to you and KC-135. Have taken up cigar chewing”. The *Nashville Banner* newspaper concluded that *Long Legs* “should reassure any who might have gotten their thinking out of focus in the blowing propaganda wind about the significance of Sputnik”.

Other records in '3126 soon followed. On March 27, 1958, he flew some 6,000 miles (9,700km) non-stop from Castle AFB in California to Ohakea in New Zealand in 15hr.



**ABOVE LEFT** The somewhat spartan sleeping accommodation available aboard '3126 during its early years of service. **ABOVE RIGHT** The galley included two small stoves and other culinary essentials. Meals were prepared from scratch aboard the aircraft, rather than on the ground for reheating in flight. A dedicated flight steward — in white jacket of course — was responsible for cooking and serving the meals on USAF-embossed fine china.



**ABOVE** Early seating and dining accommodation aboard '3126 was fairly primitive, with tables doubling as work surfaces. Additional — and in all likelihood inadequate — soundproof padding was added throughout the cabin; a vital necessity given the extremely high noise levels inside the fuselage of a standard USAF KC-135A tanker.





**LEFT** Flying for “Old Iron Pants” required consummate piloting ability, good diplomatic skills and a tough skin. When the first VC-137As entered USAF service as VIP transports, LeMay argued that they should be flown by Strategic Air Command pilots with jet experience. The Chief of Staff, Gen Thomas White, opted instead for crews with only piston time but greater experience in handling “delicate” VIPs.

AUTHOR'S COLLECTION

**BELOW** Just visible in this photograph of '3126 are the high-visibility bands it wore on its nose and rear fuselage/fin between 1958 and 1961, when they were removed and the aircraft was repainted in a new colour scheme.

While on his return from the Pacific a week later, LeMay flew non-stop from Hickam AFB, Hawaii, to Andrews AFB. That June LeMay took the KC-135 direct from Washington DC to the Nato Display at Liège, Belgium, taking American aviatrix Jacqueline Cochran with him on the 6hr 44min flight. On July 11 the same year '3126 set an unofficial record of 11hr 8min on a non-stop flight from Andrews to Hickam. Secretary of Defense Neil McElroy was aboard the aircraft, which later carried him to observe an American hydrogen bomb test in the South Pacific.

On September 13, 1958, LeMay established an unofficial speed record in '3126 while returning from Yokota Air Base in Japan to Andrews AFB. The KC-135A flew 7,100 miles (11,426km) in 12hr 28min to achieve an average speed of 570 m.p.h. (917km/h). The time could not be homologated as an official record, however, because the flight was not made under contest-timing rules. LeMay set other unofficial records and achieved notable firsts in '3126 on further occasions too, most of which were highly publicised. These flights were

heady accomplishments and projected not only American military air power but heralded the future of jet-powered intercontinental air travel.

The redoubtable '3126 was also called upon to serve more than just LeMay and senior American defence officials. Future President Lyndon B. Johnson was a frequent flyer on the aircraft as he visited military facilities (and voters) around the USA, frequently citing his mode of transport in his many speeches. As a powerful Senator who strongly supported the development of air power, Johnson understood that '3126 represented current mission capability, future defence procurement and the promise of commercial jet travel. Senior corporate officials enjoyed Johnson's largesse on these flights, and were consequently eager to compete for lucrative defence contracts.

### FAST BUT SPARTAN

LeMay occasionally flew '3126 from Andrews to Ramey AB in Puerto Rico for lunch and a round of skeet (clay pigeon) shooting before flying back



BOEING VIA AUTHOR



**ABOVE LEFT** The interior of '3126 was improved over time, the accommodation becoming more in line with the civil aircraft configurations of the day, including the incorporation of cabin bulkheads, airline-style seats and overhead baggage storage.

**ABOVE** "Old Iron Pants" — aka "The Cigar" — loved to fly, and would often take the controls from either seat on the flightdeck, especially on long-distance flights, giving the regular crew a welcome break. LeMay would also make regular take-offs and landings while flying aboard '3126.



**LEFT** The state-of-the-art galley aboard '3126 after one of its refurbishments to bring it more in line with contemporary airliner standards. The small dinner table was located a few feet from the stove and could accommodate four diners at a time.

**BELOW** An honour guard waits as '3126 arrives at Taipei, Formosa, in October 1958 with the USA's Secretary of State John Foster Dulles aboard for discussions with Chiang Kai-shek to resolve the Quemoy-Matsu Crisis. The primary entry and exit point for passengers flying aboard '3126 was via air stairs through the main cargo door in the forward fuselage, seen open here. BOEING VIA AUTHOR





*In 1961 officials deemed the all-silver military appearance of '3126 (with high-visibility orange bands which quickly became tatty) to be inappropriate for a high-prestige VIP transport, and ordered the aircraft to be painted in a more elegant red, white and bare-metal scheme with blue flashes on the white engine nacelles, as seen here.*



to Andrews in time for dinner. Among the many dignitaries to join LeMay aboard '3126 were USAF Brigadier General (and famous actor) James Stewart in March 1960.

Not all of these early VIP flights were luxurious experiences, however. On October 17, 1958, for example, Secretary of State John Foster Dulles flew to Rome in '3126 to attend the funeral of Pope Pius XII. While he was sleeping during the 9hr overnight flight, Dulles's bunk collapsed, dropping him to the floor and badly wrenching his back. Nobody knew that Dulles had fallen and he lay on the cold, hard floor in great pain until the flight reached Rome. For a young military man, this would have been a minor inconvenience, but Dulles was 70, riddled with cancer and had less than six months to live.

Two days later Dulles and his delegation flew to RAF Brize Norton in the UK to meet with British Foreign Secretary Selwyn Lloyd, who sympathised with Dulles and his wife, calling them a "gallant couple" for putting up with their discomfort in the military aircraft. The KC-135A then flew to Eielson AFB, Alaska, for refuelling before continuing to Taiwan, where Dulles would negotiate with Nationalist Chinese leader Chiang Kai-shek in an effort to defuse the 1958 Quemoy-Matsu Crisis with the People's Republic of China.

### THE McNAMARA SPECIAL

In January 1961 Eisenhower handed the Presidency over to John F. Kennedy and his administration of the "best and brightest". Kennedy made frequent use of his VC-137s (military VIP variants of the civil 707), although many of his senior staff were obliged to travel in '3126, now known among the power brokers as "The McNamara Special" in honour of the Secretary of Defense, Robert McNamara.

In his memoir *From Hiroshima to Glasnost: At the*



**ABOVE** *The improved sleeping quarters aboard '3126 after refurbishment provided greater comfort, modest privacy and additional soundproofing against in-flight noise; but, criticised as wasteful spending on needless luxury, it still remained comparatively spartan.*

*Center of Decision* (Grove, 1989), policy planner Paul Nitze, who flew in '3126, wrote that it was "unbelievably uncomfortable, with portable bunks and seats arranged in the windowless 'plane. There was no inner shell in the dimly lighted cabin area and the noise level prohibited normal conversation, much less the ability to discuss complex issues. The extremes of heat and cold added to our misery. Eighteen hours after leaving Andrews we landed in New Delhi. We emerged from the open hatch, blinking in the sunlight, like moles emerging from their tunnels on a sunny day". The return trip was no better, as Nitze recalled arriving back at Andrews AFB "suffering from a good deal more than jetlag".

*Photographed in its new scheme at Andrews AFB in Maryland on April 2, 1962, '3126 awaits its next VIP mission. With it being the height of the Cold War, one wonders how many generals and politicians who travelled on it asked why the most striking aspect of its new colour scheme was red . . .*



STEPHEN MILLER VIA AUTHOR

As with many aircraft dedicated to VIP missions, '3126 earned more than its share of notoriety. A report in the January 1, 1958, issue of *The New York Times* that stated that Vice-President Richard Nixon was to use the aircraft on several official trips led to widespread criticism that the aircraft was being misused as Nixon's personal transport. The White House responded that Nixon had merely been offered an orientation flight.

Similarly, when Princess Beatrix of The Netherlands chose to honeymoon in Mexico in March 1966 she and her new husband flew aboard '3126 from Frankfurt, Germany, to Andrews AFB, provoking (arguably justified) charges that the American taxpayer was subsidising the personal travel of foreign heads of state. In an early example of the modern art of political "spin", USAF and Dutch staff officials pointed out that the Princess had reimbursed the former for the use of '3126 at a rate equivalent to round-trip First Class accommodation on a commercial airliner, to the tune of \$553.84 each for her and Prince Claus.

More controversy followed when, on April

13, 1968, USAF Airman First Class Patrick J. Nugent flew aboard '3126 from Andrews AFB to Saigon, South Vietnam, along with the USA's Ambassador to South Vietnam, Ellsworth Bunker. Nugent was the son-in-law of President Lyndon Johnson, and critics wondered why he had received such special treatment while other troops arrived in crowded cargo aircraft or even troopships. (US Marine Corps Capt Charles Robb, Johnson's other son-in-law, arrived in South Vietnam along with his troops aboard a USMC transport aircraft.)

### ENTER THE SPECKLED TROUT

During 1966 five C-135Bs were assigned to Andrews AFB for VIP operations and '3126 was relegated to a new role that combined its transport mission with testbed duties. It was assigned to the USAF's Flight Dynamics Laboratory (FDL) at Wright-Patterson AFB, but was based at Andrews AFB to fulfill its secondary mission of transporting high-ranking personnel, such as the chairman of the Joint Chiefs of Staff.

During its time with the FDL, '3126 earned

*. . . which may have affected the decision to repaint '3126 in the same basic scheme but with the bright red replaced with blue, more in keeping with its USAF VIP role, as seen here at Andrews on May 10, 1964. This scheme was also soon replaced, being deemed too similar to that worn by the VC-137s of the USAF's Special Air Mission.*



RICHARD SULLIVAN VIA STEPHEN MILLER



Still wearing the "Speckled Trout" scheme from its days operating with the USAF's Flight Dynamics Laboratory at Wright-Patterson AFB during 1966–75, '3126 languishes in the baking sun at the Military Aircraft Storage & Disposition Center at Davis-Monthan AFB in Arizona shortly before it was struck off charge and scrapped in 1978.



the nickname "The Speckled Trout" in honour of Faye Trout, the highly-freckled civilian programme monitor at the laboratory. The aircraft served as a flying testbed for advanced-technology automatic landing systems and terminal area (North American VFR aeronautical navigation charts) projects, and also evaluated other state-of-the-art aviation-related equipment in a variety of operational environments.

On February 8, 1975, C-135C serial 61-2669 became the new Speckled Trout and '3126 was slated for retirement. It flew for the last time on July 31, 1975, landing at the Military Aircraft Storage & Disposition Center (MASDC) at Davis-Monthan AFB in Arizona, having accrued a total of 9,057 flying hours. It was assigned the Processing Control Number (PCN) CA004, and was stripped of parts for use in its replacement, including the glare shield, the entire navigator's station, both control columns, instrument panels, numerous "black boxes" and the Mark III anti-skid system. It was finally struck off charge on January 5, 1978, and allocated for scrapping.

Its forward fuselage was moved to the Boeing Military Aircraft Company (BMAC) at Wichita, Kansas, as part of a cockpit mock-up in support of fleet programmes, and both wingtips were used in the 1979 KC-135 winglet programme on NASA NKC-135A serial 55-3129 (N837NA). The fin was reportedly used as a training mock-up for *Armée de l'Air* maintenance personnel, and BMAC used the starboard wing as a mock-up for trials of the CFM-56 re-engining programme.

#### A COLD WARRIOR FOR AN OLD WARRIOR

Over the course of its 20-year operational life, 55-3126 was most closely associated with Curtis LeMay. He flew it around the world, setting multiple records while championing the relevance and potential of manned aircraft in the early years of intercontinental ballistic missiles. He used it as a personal transport, ultimately evolving the concept of a fleet of jet-powered VIP aircraft. When critics decried

what they saw as its flagrant misuse and called for harsh restrictions on '3126's operations, LeMay stood firm. He was adamant that these flights were much more a demonstration of American military and industrial capacity than a vainglorious attempt to pursue speed and distance records.

The congressmen, staffers and businessmen who used 55-3126 over its illustrious career were highly influential when it came to the future of American security and air travel. Given such a legacy, the Speckled Trout from Moses Lake deserves to have been preserved; Andrews AFB would have been a good choice. Instead its ignominious end at the famous Arizona "Boneyard", and subsequent dimemberment, failed to serve as a suitable testament to all it had accomplished and everything this much-travelled stalwart had presaged for military and civil air transport.



**ACKNOWLEDGMENTS** *The author would like to thank Chief Master Sergeant Bobby McCasland, crew chief on KC-135 serial 55-3126, for his invaluable assistance with the preparation of this article*

ROBERT S. HOPKINS III is a former USAF Boeing RC-135S *Cobra Ball* pilot and author of the forthcoming definitive history of the ubiquitous C-135 family of aircraft, *The Boeing KC-135 Stratotanker: More Than Just A Tanker* (ISBN 978-1-910809-0-13), to be published in March 2017 by Crécy Publishing. A revised and substantially expanded edition of the original Aerofax monograph on the type, it includes details of the type's 80+ variants, plus individual histories of all 820 built. For more info visit the website at [www.crecy.co.uk](http://www.crecy.co.uk)



**Cliff Durant in the cockpit of his Ansaldo Balilla ("little boy"), serial 16608, in 1920. Note the bent engine cowlings, which became unhinged during one of Durant's flights in the aircraft.**

PETE COLOMELLO VIA AUTHOR



## THE ITALIAN JOB

**JUANITA FRANZI** continues her series of articles on notable airframes and their markings with the story of a Great War-vintage Italian fighter owned and flown by General Motors scion Cliff Durant in the 1920s

**I**N THE 1920s the USA was booming with entrepreneurial spirit. Men hatched grand plans, deals were done, and foundation stones laid, but success was often elusive in the land of opportunity. Captain Eddie Rickenbacker, "America's ace of aces", returned to the USA at the end of the First World War looking for financial opportunities. He was torn between the future potential of aviation and the burgeoning automobile industry. In 1920 he teamed up with R.C. "Cliff" Durant and, for a short time, was able to bring these two passions together.

Both Rickenbacker and Durant had seen some success in the pre-war automobile racing scene. Employed by the Frayer-Miller Automobile Co in 1906, Rickenbacker learned about automobile manufacture and, at the age of 16, began his racing career. By 1916, his final year of racing, he had achieved third ranking under the American Automobile Association's points system.

Cliff was the son of W.C. "Billy" Durant, the founder of General Motors (GM), and had been on the racing circuit since 1915, achieving an impressive tally of wins. He had also learned to fly. For many years he had been the Vice-President of the Chevrolet Motor Co of California. In 1919 Cliff purchased the huge Edenvale estate in the foothills behind San Leandro, a suburb of Oakland, and built Durant airfield a few miles away. He then established the Durant Aircraft

Corp to fly passenger services from the airfield, from where he also ran a flying school.

Rickenbacker spent early 1919 undertaking a Liberty Bond drive under orders from the US Army. When free from that commitment he published his book, *Fighting the Flying Circus*, which provided him with some income. Through his racing career, army service and the speaking circuit, Rickenbacker had made strong connections with many key players in the aircraft and automobile worlds. Many ideas were raised, including movie stardom, transatlantic flights and the supply of aircraft to the military. By late 1919 he was discussing the idea of a Rickenbacker car with well-placed contacts in Detroit, and in 1920 construction of a prototype began in secret. At the same time, Rickenbacker became involved in a promotional transcontinental New York—California flight for the USA licensee of the Junkers-F 13, rebranded as the Larsen LJ-6. Three LJ-6s were to fly from New York to California to prove the type's capabilities. The flights did not go smoothly and neither did John Larsen's arrangement with Junkers. Despite a number of mishaps, two of the LJ-6s finished the flight, arriving at Durant Field on August 8, 1920.

Durant and Rickenbacker obviously talked, because in December 1920 it was announced that the latter had become the Vice-President and

**Continued on page 58**



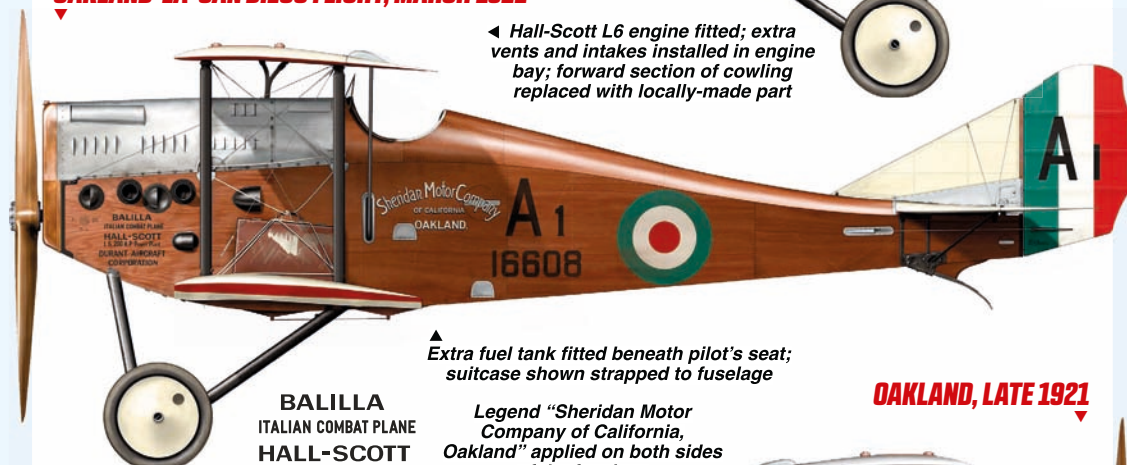
# ANSALDO A.1 BALILLA Aviazione Militare serial 16608

Aircraft in standard  
Italian military markings  
as it arrived at Durant  
Field, San Leandro,  
Oakland, California, 1920.  
Fitted with SPA 6A engine



## OAKLAND-LA-SAN DIEGO FLIGHT, MARCH 1921

◀ Hall-Scott L6 engine fitted; extra  
vents and intakes installed in engine  
bay; forward section of cowl  
replaced with locally-made part



▲ Extra fuel tank fitted beneath pilot's seat;  
suitcase shown strapped to fuselage

**BALILLA**  
ITALIAN COMBAT PLANE  
**HALL-SCOTT**  
L 6. 200 H.P. Power Plant  
**DURANT AIRCRAFT**  
CORPORATION

Legend "Sheridan Motor  
Company of California,  
Oakland" applied on both sides  
of the fuselage ▼

## OAKLAND, LATE 1921



▲ Port-side view after fitting of Hall-  
Scott L6 engine; flying surfaces  
appear to have been repainted in  
aluminium dope

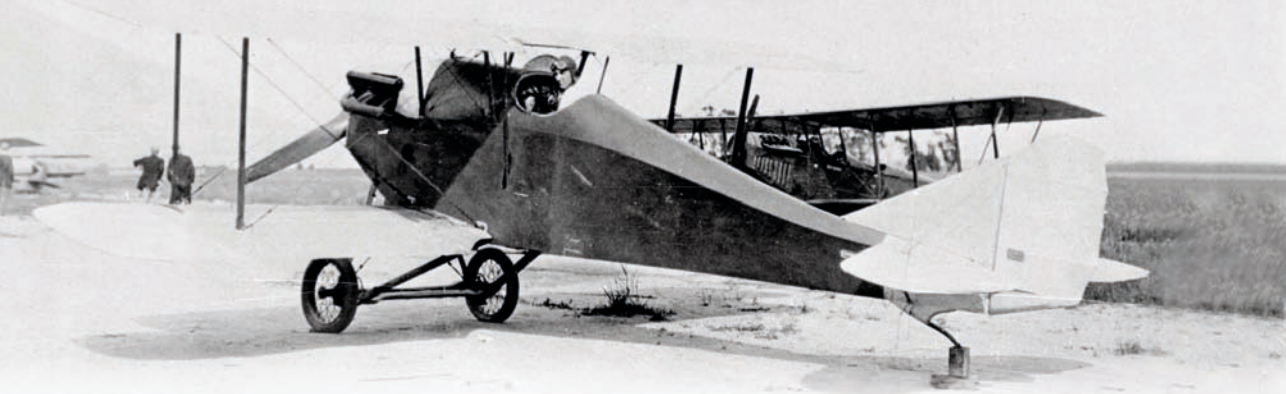
Underside view at time  
of delivery in 1920 (not  
to scale with side-views);  
typical Italian military  
colours applied to wing  
undersurfaces; Italian  
propeller has finished  
paint, probably light grey

Top wing detail  
including fuel and oil  
fillers (to scale with  
underside view)



*The Balilla in its later incarnation fitted with a Hispano-Suiza engine, possibly with Cliff Durant in the cockpit. In total, six examples of the rather elegant biplane were imported into the USA in the early 1920s.*

ROBERTO GENTILI VIA AUTHOR



Continued from page 56

General Manager of Cliff's newly-established Sheridan Motor Co of California, which would handle the distribution of GM's Sheridan brand of cars within the lucrative Californian market. Reportedly, Rickenbacker took the job because he wanted the experience, to help put his own automobile plans into action. Rickenbacker moved to California and stayed in Cliff's mansion.

### **RICKENBACKER'S RUNABOUT**

Rickenbacker saw the value of using an aircraft as a promotional tool as well as a hack in which to visit distributors. Durant already had a fast, glamorous aircraft for the job; an Ansaldo A.1 Balilla he had purchased in early 1920. Designed as a fighter with a top speed of 134 m.p.h. (215km/h), the Balilla arrived too late to see much action in the Great War. With the outbreak of peace, the Italian military cancelled all outstanding orders for the type, prompting Ansaldo to turn its attention to export sales. In early 1919 the type was demonstrated at Cook Field, Ohio, but it crashed, killing its Italian test pilot. Undaunted, Ansaldo proceeded to open an office in New York City in 1919 to promote its range of aircraft to the civil market.

Durant clearly liked the Balilla and flew it regularly at air shows at his airfield during 1920. During one of these flights the cowling became unlatched and crumpled over the upper wing's leading edge. A locally fabricated replacement cowling was fitted and, from this time on, the cowling fasteners were wired.

In early 1921 the Balilla's Italian SPA 6A engine was replaced with a 200 h.p. Hall-Scott L6, then being promoted within the military and civil markets. The L6 used components from the Liberty engine, co-designed by Elbert Hall of Hall-Scott and Jesse Vincent of Packard, and Hall-Scott used Durant Field for flight-testing the L6 in Fokker D VIIIs. Other than the different exhaust-pipe spacing, the only external changes to the Balilla were the addition of carburettor

intakes and various vents on the port side. After conversion all the stakeholders were acknowledged in an inscription on the nose.

Rickenbacker began planning a record-setting flight to be made on March 26, 1921, to coincide with a San Diego automobile dealers' trade show. As he intended to fly non-stop from Oakland to San Diego via Los Angeles, an extra fuel tank was fitted below the cockpit seat. To front-page acclaim, Rickenbacker broke the Oakland—LA record by more than 20min, circling LA's Rogers Field before turning south for San Diego. Unfortunately he made a forced landing at Point Loma Golf Club, only a few miles short of his destination. Thinking he had run out of fuel, Rickenbacker was relieved to find it was only a carburettor problem. He was soon on his way, arriving at Rockwell Field, Coronado Island, at 1340hr, having flown 470 miles (760km).

In July 1921 Rickenbacker began promoting another attempt on the Oakland—LA record. This time it was related to an automobile and aviation event at the Beverly Hills Speedway, owned by a consortium including Cliff Durant. However, Rickenbacker and Durant's business was ailing, with ongoing problems concerning deliveries of Sheridan cars, and although Californian sales were good the recession was affecting overall sales, prompting the termination of the brand in August. July had seen the incorporation of the Rickenbacker Motor Co and on August 8, 1921, Rickenbacker announced that he had severed links with Sheridan. Meanwhile, Durant's wife Adelaide filed for divorce and went on to marry Rickenbacker the following year.

Rickenbacker's marriage to Adelaide was to last his lifetime, but his car company failed in 1926. Hall-Scott stopped making aero-engines in the 1920s. Ansaldo had imported six Balillas into the USA before its main customer, Aero Imports, went out of business in late 1921. Durant re-engined the Balilla with a Hispano-Suiza and it was later used in Hollywood films.





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# MIRAGE AU CONGO

## THE DASSAULT MIRAGE 5M/DM IN ZAIRE, 1975–88

In late 1975 the *Force Aérienne Zaïroise* took delivery of the first of its total of 14 single- and two-seat Dassault Mirage 5M/DMs from France. **ARNAUD DELALANDE** profiles the distinctive delta-winged jet fighter's career in Zaïre, in which it saw action in two civil wars as well as a detachment to Chad, but where its chief adversary was arguably its own pilots



**O**N MAY 22, 1974, an agreement between France and the Republic of Zaïre (now the Democratic Republic of Congo) on technical military co-operation was signed in Kinshasa, the Zaïrian capital. The agreement followed the sale a few months earlier of 14 examples of France's state-of-the-art single-seat Dassault Mirage 5M (M for Mobutu, the Zaïrian President) and three two-seat Mirage 5DM jet fighters. The programme included the instruction in France of personnel of the *Force Aérienne Zaïroise* (FAZ). Accordingly, a group of young Zaïrian officers was despatched to Dijon to convert to the sophisticated delta jet.

Pierre Grosjean, then an instructor with the *Armée de l'Air* training unit *Escadre de Chasse*

*d'Entraînement* (ECT) 2/2, "Côte d'Or", recalls: "I had three Zaïrian trainees on the Mirage IIIBE; Lt Leon M'Bo (six flights between September 12, 1974, and October 8, 1975); Lt Guillaume Bafuma Limpaka on February 26, 1976, and Lt Kabeya on April 16, 1976". Conversion training continued in Dijon from July 1977 with two Zaïrian Mirage 5DMs and one Mirage 5M, after which the Zaïrian pilots completed their training with *Escadre de Chasse* (EC) 3/3, "Ardennes", at Nancy-Ochey.

### MIRAGES TO AFRICA

The terms of the French-Zaïrian contract stipulated that Dassault would deliver the first batch of Mirages before November 24, 1975, the tenth anniversary of the seizure of power by





**LEFT** Three Zairian pilots, including Jean-Louis M'Pele (furthest left), pose beside Mirage 5M serial M412 at N'Djamena during their detachment to Chad in 1983.



**BELOW** Mirage 5Ms M401, M402, M403 and M404 with their C-160 Transall support aircraft at Abidjan, Ivory Coast, on March 21, 1976, during their delivery flight from France to Zaire. Note the French roundels displayed prominently on the Mirages' fins.



MARCEL FLUET-LECERF VIA AUTHOR

President Mobutu Sese Seko in 1965. Owing to a delay in the delivery of some of the first tranche of Zairian Mirages, however, France lent three Mirage 5Fs for the festivities in Zaire.

Operation *Salongo* started on October 13, 1975, the first Zairian two-seaters (serials M201 and M202) accompanying three Mirage 5Fs of EC 3/13, "Auvergne", from Colmar in north-eastern France, the latter painted in makeshift Zairian markings. For the ferry flight, one of each of the fighters' two UHF radios was modified to be compatible with the VHF air traffic control systems in Africa. The Mirages were supported by a pair of French Transall C-160s wearing Zairian markings for the short-term mission.

The five Mirages arrived in Kinshasa just in time

for the national celebrations. After the ceremony President Mobutu allowed the two Transalls to depart for France but blocked the return of the three French Mirages and their pilots, stating that they would remain in Zaire until the delivery of the first single-seaters in March 1976. However, an agreement was reached between Zaire and France in which the pilots would be replaced every six weeks, with the new pilots arriving on Air Zaire's Paris—Brussels—Kinshasa McDonnell Douglas DC-10 service, the thankful replacees returning to France the next day on the same DC-10. This unhappy duty fell to the crews of squadrons EC 3/13 and EC 3/3.

The second Zairian Mirage delivery flight took off from Bordeaux-Mérignac on March 18, 1976,



**LEFT** Lieutenant Mukendi Kabanga of the Force Aérienne Zairoise (FAZ) prepares to climb aboard a Mirage IIIBE of EC 2 for another training sortie at Dijon in 1976. Kabanga went on to become a commercial pilot, flying for Air Zaire and later, its replacement, Lignes Aériennes Congolaises (Congoles Airlines), with which he flew Boeing 737s.

AUTHOR'S COLLECTION

**BELOW** Although bearing the Zairian flag on the fin and the FAZ serial M401 on the fuselage, the grey-green camouflage pattern marks this out as one of the three Armée de l'Air Mirage 5Fs of EC 3/13 sent to Zaire as part of Operation Salongo, the first delivery flight, in which French single-seaters were sent as interim replacements for the unready 5Ms.

comprising Mirage 5Ms M401, M402, M403 and M404, all painted in Zairian camouflage but with French roundels prominently displayed on their fins. Two support Transalls accompanied the quartet. The Mirage 5Ms were not equipped with aerial refuelling equipment, carrying only two external tanks of 1,700lit (375gal), necessitating several stopovers during the ferry flight.

After 1hr 45min the delta fighters landed at Rabat in Morocco, pushing on the same day to Las Palmas in the Canary Islands. The following day the Mirages flew to Dakar in Senegal in 2hr 30min, heading on to Bamako in Mali on March 20. The 21st saw them arrive at Abidjan, Ivory Coast, before reaching Lomé, the capital of Togo, and Libreville in Gabon in 1hr 20min and 1hr 50min respectively on the 22nd. The group finally arrived in Kinshasa on March 23, the French roundels having been removed for the final leg.

Pierre-Alain Antoine, the pilot of Mirage M402, recalls: "We had to hold off our arrival over the runway at Kinshasa so that Capt M'Bo could join us for an overflight of the city and a flypast over

Mobutu's palace. Unfortunately, M'Bo had a tyre burst during taxiing out in a Mirage so he joined our four Mirages in a Beechcraft for the flight over the palace balcony".

The following week, with a third Transall having delivered the Mirages' guns and ammunition, the French airmen returned to France following the same route in the three borrowed Mirage 5Fs plus two-seat Mirage 5DM M202, which was to return to Dijon for the training of Zairian pilots.

Pierre-Alain Antoine remembers the trip home: "On March 30 I flew Libreville—Lomé in the back seat of M202 in 1hr 40min. Unfortunately, we had a minor accident on landing in Lomé which necessitated the fitting of three new undercarriage legs, which had to be removed from Mirage 5DM M203, ready at Bordeaux for delivery, and brought to Lomé.

"We left Lomé on April 6 and reached Bamako in 1hr 50min. I flew the rest of the trip in Mirage 5F serial 31 [completing Bamako—Dakar in 1hr 35min on April 7 and Las Palmas—Rabat in 1hr 30min on April 9]. Mirage 5DM M202 headed



MARCEL FLUET-LECERF VIA AUTHOR



*Single-seat Mirage 5M serial M407 taxiing in from — or out for — its acceptance flight at Bordeaux-Mérignac in July 1976. The FAZ's Mirage two-tone camouflage pattern was essentially the same as that of the Armée de l'Air's examples, but with the French grey replaced by a yellow-green, better suited to Zaïre's equatorial environment.*

MARCEL FLUET-LECERF VIA AUTHOR



to Dijon while the three Mirage 5Fs landed at Nancy-Ochey, before proceeding to Colmar on April 9. The pilots returned overnight to Nancy in the Transall that had followed the group."

The last delivery flight of eight aircraft, named Operation *Koba*, was made on November 27, 1976, comprising 14 pilots and 37 mechanics. These aircraft joined the other Mirages in the FAZ's 211e Escadrille, a unit of the 21er Escadre de Chasse et d'Assaut (21st Fighter/Assault Sqn), part of 2 Groupement Aérien (2nd Air Group), based at Kamina in Shaba (previously and later Katanga), the southernmost province in Zaïre. The last three single-seaters — M412, M413 and M414 — were never delivered and were modified by Dassault to become Mirage 50EVs for Venezuela.

## INTO ACTION

Lasting 80 days, the First Shaba War broke out on March 8, 1977, when 2,000 fighters of the Front for the National Liberation of the Congo (FNLC) invaded Shaba province, supported by troops from Angola and probably Cuba, quickly taking the cities of Mutshatsha, Kisengi, Kasaji, Sandoa and Kapanga. Zaïrian Mirages would be engaged repeatedly in the conflict. Initially their involvement turned out to be calamitous, both from the tactical perspective — they would take off every day at the same time — and on a technical level; frequent gun-jams and bombs which failed to explode were common occurrences. Having received a request for assistance, France sent a military mission with armament specialists, including Jean-Paul Bour, who recalls:

"I was assigned to Zaïre in March 1977 and sent to Kamina to solve these weapons issues. I had 24hr notice to get there and had to stay for a week as there was no aircraft for the return. I had no change of clothes, no toilet bag and little idea of how or where to feed myself. The latter was solved when I met three French paratroopers

## DASSAULT MIRAGE 5M DATA

**Powerplant** 1 x SNECMA Atar 9C turbojet of 9,430lb-thrust without afterburner, 13,688lb-thrust with afterburner

### Dimensions

Span	8.22m	(26ft 11½in)
Length	15.55m	(51ft ¼in)
Height	4.5m	(14ft 9in)
Wing area	35m²	(376.8ft²)
Wheel track	3.15m	(10ft 4in)
Wheelbase	4.87m	15ft 11½in)

### Weights

Empty	7,150kg	(15,760lb)
Maximum take-off	13,700kg	(30,200lb)

### Performance

Maximum speed		
at 12,000m (40,000ft)	Mach 2.2+	
at sea level	1,390km/h	(865 m.p.h.)
Cruise speed		
at 11,000m (36,000ft)	Mach 0.9	
Landing speed	300km/h	(187 m.p.h.)
Landing run using		
brake parachute	700m	(2,300ft)
Rate of climb	186m/sec	(36,600ft/min)
Service ceiling	17,000m	(55,800ft)
Ferry range	4,000km	(2,500 miles)
Combat radius		
(hi-lo-hi profile with		
2 x 400kg bombs +		
max external fuel)	1,350km	(780 miles)

### Armament

**Ground attack** 2 x 30mm DEFA 552 cannon (125 rounds each) + up to 4,000kg (8,800lb) of weapons + 1,000lit (220 Imp gal) of fuel in droptanks mounted on a total of seven wing- and fuselage-mounted hardpoints

**Interceptor** 2 x 30mm DEFA 552 cannon + 2 x AIM-9 Sidewinder or 2 x Matra Magic air-to-air missiles + 4,700lit (1,035 Imp gal) of fuel in wing-mounted droptanks



**ABOVE** Minus droptanks, Mirage 5M serial M408 was photographed at Bordeaux-Mérignac in June 1976 before its delivery to Zaïre that November. The Mirage 5 was essentially a simplified version of the Mirage III fighter, making it an affordable but rugged state-of-the-art fighter for smaller air arms. The prototype first flew on May 19, 1967.

on site. The faulty weapons were fixed and the bombings became more effective."

Finally, 1,500 Moroccan soldiers were sent as reinforcements to Kolwezi and Lubumbashi in 13 Armée de l'Air Transalls, as part of Operation *Vervaine* during April 6–16. Positions held by the FNLC in Dilolo, Kasaji, Sandao and Kisengi were attacked by the FAZ Mirages. The combined Zaïrian and Moroccan forces retook Mutshatsha in late April and FNLC troops withdrew from Shaba on May 26.

On April 27, 1977, a national holiday in Togo, the FAZ was invited to perform a flypast over Lomé, the Togolese capital. Three Mirage 5Ms took part, flown by French instructor Lt-Col Georges Bouge, Capt Leo M'Bo and Lt Jean-Louis M'Pele M'Pele. The return flight plan from Lomé to Kinshasa included a possible diversion to Kitona in the case of bad weather or an unavailable runway. The Mirages arrived at Kinshasa in the middle of a major tropical storm, with towering cumulo-nimbus, heavy wind and rain and extremely poor visibility. Bouge found an

opening in the clouds and plunged through it to make a somewhat hair-raising but safe landing at Kinshasa. Knowing that his fellow pilots did not have his considerable experience, he advised them to divert to Kitona. Captain M'Bo nevertheless elected to try his luck on the rainswept runway below and, after a challenging approach, landed with difficulty, deploying his tail parachute and braking immediately on touching down; M'Pele M'Pele followed — straight into the back of M'Bo's Mirage. Fortunately nobody was hurt and the aircraft were repaired.

## SHABA II

The Second Shaba War was initiated by the infiltration of several thousand FNLC fighters into Shaba from Zambia on May 11, 1978. Two days later FNLC troops attacked Kolwezi airport and occupied the city. At around 1630hr, during preparations for the forthcoming Operation *Bonite* (aka *Léopard*), devised to liberate 3,000 European civilians taken hostage by the Katangan rebels, M'Bo spotted a convoy of enemy vehicles while

**A rare photograph of an FAZ Mirage in action on home soil. With drag 'chute streaming, a single-seater comes in to land at Kamina Air Base in southern Zaïre during the Second Shaba War in the spring of 1978. The Mirage demanded a high degree of skill for landing, having a speed "over the fence" of some 185 m.p.h. (300km/h).**

JEAN-PAUL BOUR VIA AUTHOR







**ABOVE** Three Mirage 5Ms on the ramp at Kamina awaiting their next missions during the Second Shaba War. The majority of Mirage missions undertaken during the conflict were flown by French pilots Georges Bouge and Jean-Pierre Fartek, who were in Zaïre as instructors, although at least one Zaïrian pilot saw combat during the conflict.

flying over the area in a Mirage 5M. Jean-Paul Bour, then in Kamina with his team of armament specialists, recalls:

"M'Bo did not shoot, because we intercepted a rebel radio message that stated that six French members of the *Assistance Militaire Technique* [France's Military Technical Mission] had been kidnapped in Kolwezi when the city was taken and were aboard the vehicles. In fact they had been executed some time before."

The next day, another Mirage was despatched and opened fire on the Impala Hotel in Kolwezi, headquarters of "les Tigres" (as the Katangese rebels referred to themselves), but caused no damage. Shortly afterwards, a pair of Mirages attacked various targets. Jean-Paul Bour explains:

"During the Second Shaba War, the Mirage 5Ms were piloted mainly by the French. Shortly before the conflict broke out, Georges Bouge was replaced by Jean-Pierre Fartek in the role of instructor. When Operation *Bonite* started around May 16, however, Bouge received orders to return as a reinforcement. We thus had two French and two or three Zaïrian pilots. We moved operations to Kamina, about 200km [125 miles] north-west of Kolwezi. The first Mirage missions were undertaken by one Zaïrian and two French pilots.

"On May 19 no airstrikes were ordered, but reconnaissance and a token 'show of force' over Kolwezi were undertaken. From May 20 operational information from French paratroopers and other forces in Kolwezi enabled us to provide air support against the rebels. After that we were mainly attacking columns of fleeing rebels."

On May 20 an FAZ Mirage saw action after three rebel vehicles were spotted south of the metallurgical plant owned by the *Société Métallurgique du Katanga* (Metalkat, now Metal-Shaba). The vehicles were immediately subjected to heavy mortar fire from the French paratroopers,



JEAN-PAUL BOUR VIA AUTHOR X 2

**ABOVE** In his distinctive green helmet, Major Luamba prepares for a mission in a Mirage 5M during a series of French-Zaïrian tactical exercises held in September 1979 under the name Porc-Epic. The Mirage 5Ms were officially designated M5Ms by Dassault, as seen here in the legend on the fuselage beneath the cockpit.

which all but destroyed the convoy, the survivors fleeing north. A Mirage 5M made a firing pass on the rebels on the road to Kazenze, the group having been spotted by an Alouette III helicopter. During May 22–23 French reinforcement mechanics and pilots from EC 13 arrived from Colmar. Operation *Bonite* ended in early June.

### **MORE CEREMONIAL FLYING**

In late 1978, Zaïre was invited to participate in the celebration of the second anniversary of the coronation of Jean-Bédél Bokassa, the self-proclaimed "Emperor of Central Africa", in Bangui in the Central African Republic. The FAZ agreed to provide a pair of Mirages for a ceremonial flypast, and three Zaïrian pilots took off for Bangui on December 8. Leading the pair was Lt M'Pele M'Pele with another pilot, Luamba, in the back seat of Mirage 5DM M202,

One of the FAZ two-seat Mirage 5DMs is prepared for a mission at Kamina, with the large military air base's distinctive hangars in the background. The FAZ operated a total of 11 single-seaters and three two-seaters, three of the single-seaters being diverted to Venezuela.



LEFT Lieutenant Guillaume Bafuma Limpaka in the cockpit of an FAZ Mirage 5M during the First Shaba War. Lasting from March to May 1977, the conflict resulted in a nominal victory for Mobutu and the Zairian military, although hostilities broke out again in the Shaba region (as Katanga was renamed by Mobutu) the following year, lasting from May to June.

RIGHT Typical of the level of sophistication — or lack thereof — to be found in the ground and maintenance operations of the FAZ, one of the two Mirage 5Ms involved in the runway collision on their return from Togo in April 1977 is seen here supported not with a jack, but with a barrel and a pair of tyres. Fortunately both aircraft were lightly damaged and repaired.



ABOVE Looking somewhat disconsolate, Mirage 5M serial M402 is seen here supported on 200lit barrels minus its nosecone, canopy and engine at N'Djamena following its take-off accident during the FAZ's detachment to Chad during 1983–84. The three Mirages sent — M402, M404 and M412 — saw no active combat during their spell there.



*Two-seat Mirage 5DM serial M201 with long-range fuel tanks beneath its wings. Note the Zairian flag, incorporating a light-green field with a yellow circle in which a right hand holds a torch with a red flame, on the fin. By 1988, only one of the three two-seaters remained serviceable, and was ultimately sold back to Dassault to provide spares for Egypt's Mirages.*



Capt M'Bo following them in Mirage 5M M401.

For the return flight to Kinshasa, Jean-Pierre Fartek had given them strict instructions: "As severe thunderstorms are common in Kinshasa, I had asked the pilots to await my instruction to take off from Bangui, to give them the best chance of good weather for landing. After the flypast of the two Mirages, however, instead of landing and waiting for the call as agreed, M'Bo decided to take the lead and return directly to Zaïre, M'Pele M'Pele following him.

"On arrival in Kinshasa the weather was terrible, and a first attempt to land failed. Rather than re-route to Kitona as planned, M'Bo made a second attempt which also failed. He finally diverted to Kitona, but, with poor visibility, both Mirages flew out to sea heading south and were quickly out of fuel. All three airmen ejected believing they were near Kitona, but quickly realised when confronted by gunmen on landing that they were actually near Luanda in Angola. I contacted Luanda, which confirmed after a while that the three pilots had ejected and were being well kept as prisoners".

All three pilots were eventually repatriated through diplomatic channels. As a result of this unnecessary and expensive episode, M'Bo was removed from Mirage operations. Luamba further "distinguished" his career by performing a belly landing after forgetting to extend his Mirage's undercarriage.

## INTERVENTION IN CHAD

In June 1983 the *Gouvernement d'Union Nationale de Transition* (GUNT — Transitional Government of National Unity; the former coalition government of armed groups that ruled Chad during 1979–82), supported by Libya, engaged a new offensive to overthrow the prevailing regime led by President

Hissène Habré. The GUNT seized the towns of Faya Largeau and Abéché, and began a push towards N'Djamena, the capital.

Zaïre sent three Aermacchi MB-326K ground-attack jet fighters, three Mirage 5Ms and an Aérospatiale SA.330 Puma helicopter to support Habré. Having notoriously short range and lacking an aerial refuelling capability, the delta-winged fighters had little opportunity to see action against the GUNT. Mirage 5M M402 suffered significant damage at N'Djamena when a mainwheel tyre burst during take-off, as Pierre-Alain Antoine remembers:

"The aircraft was being flown by Jean-Louis M'Pele M'Pele; Capt M'Bo and Major Mayele Nkoy were in the control tower at the time of the accident. The pilot was unhurt. For some time the Mirage was placed on 200lit barrels in N'Djamena before being dismantled by French mechanics and repatriated to N'djili Air Base in Kinshasa in 1990. When the Zairian detachment withdrew from Chad in April 1984 the remaining two Mirages [M404 and another] made stopovers in Bangui with a Beech King Air, at the controls of which was M'Bo."

By 1988 only seven single-seat Mirage 5Ms and one two-seat Mirage 5DM remained on the FAZ inventory. All were bought back by Dassault, which sold them to Egypt as spares sources for its own Mirage 5s. As for M402, considered irreparable because of its twisted fuselage, it was sold to the owner of a small ultralight airfield in central France, where it remains today.



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# UNLUCKY

# 13

## FOKKER'S FORGOTTEN TWIN TRAINER

As part of its rebuilding after the war, Dutch aircraft company Fokker was tasked with designing a twin-piston-engined crew trainer to replace the nation's obsolescent Oxfords and Ansons. Dutch aviation specialist **NICO BRAAS** charts the development of the sole S.13, which, faced with stiff competition from readily available cheaper alternatives, failed to attract a single customer

**A**FTER THE END of the Second World War, the board of directors of Dutch aircraft manufacturer Fokker set about rebuilding the company. All that was left after German troops had removed the vast majority of usable equipment before their withdrawal was a derelict aircraft factory located on the Papaverweg at Amsterdam-Noord. The company's first tasks included rebuilds of various types such as the Douglas C-47 for future civilian use, and the construction of gliders for the national soaring clubs, including a number of examples of the elementary single-seat ESG *Schulgleiter* (school glider), Grunau Baby and Göppingen Gö 4 two-seat trainer. The first post-war machine of Fokker's own design to be put into production was the S.11 Instructor two-seat piston-engined monoplane trainer, followed by the sole S.12, similar but equipped with a tricycle undercarriage.

### THE BRITISH INFLUENCE

The company's next design was the S.13 crew-trainer, designed as a replacement for the Dutch military's ageing Airspeed Oxfords and Avro Ansons. At that time, the co-ordination of new aircraft projects in the Netherlands was undertaken by the *Nederlands Instituut voor Vliegtuigontwikkeling* (NIV — Dutch Institute for Aircraft Development), which, in 1946, ordered the design and construction of a single S.13 prototype.

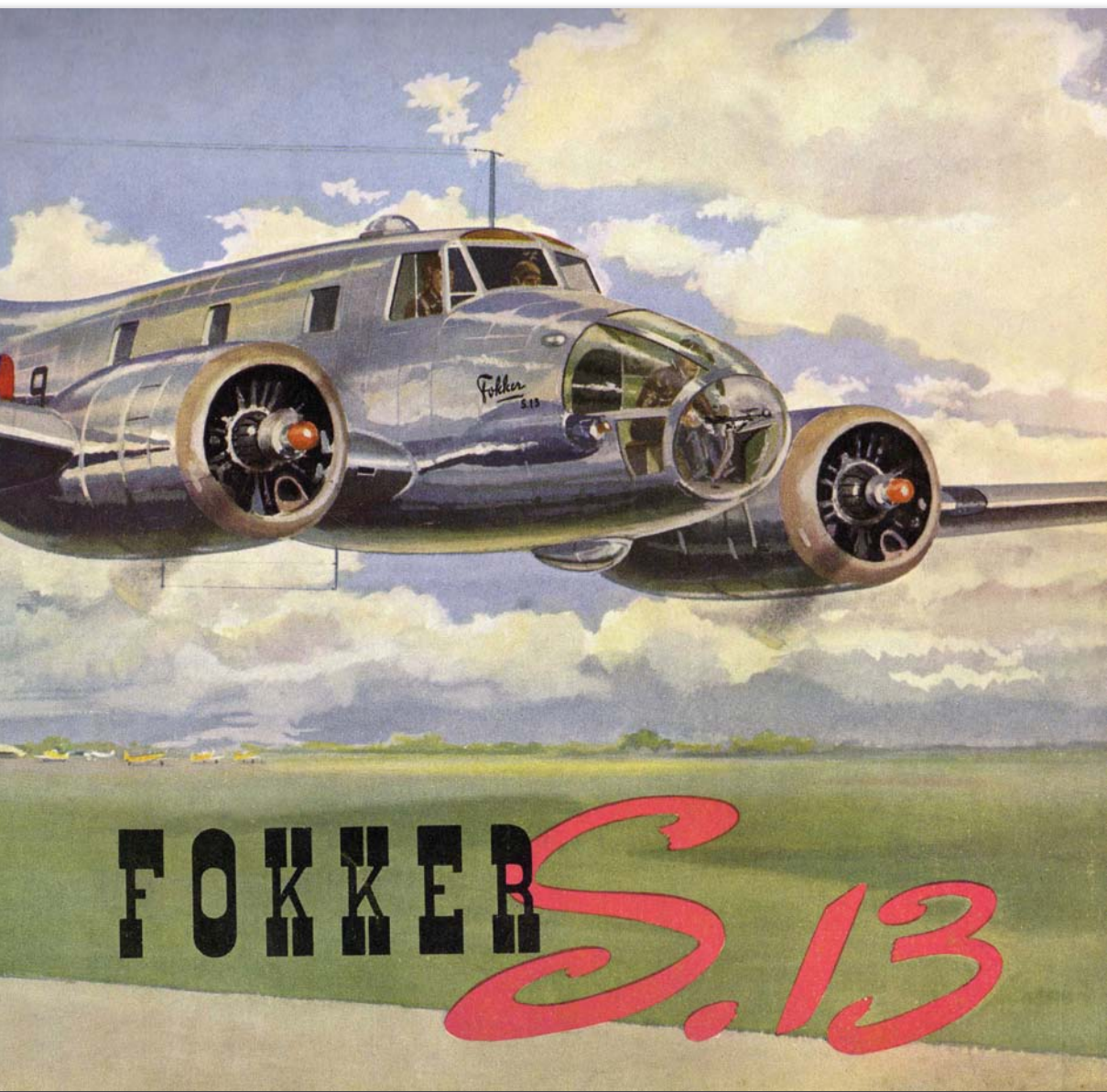
As with the company's later S.14 Machtrainer (see the author's article in *TAH14*), the S.13 was designed around the specifications outlined in the UK's *Air Publication 970*, which detailed the requirements for size, weight and armament for military aircraft, although these were not always strictly followed by Fokker. The new project received the preliminary *Ontwerpnummer* (design number) 236. Under this designation, various



**ABOVE** The original 1950 Fokker brochure for the S.13, featuring a handsome illustration of the type in service as a crew trainer on its cover. After the war the newly-established Dutch Directorate of Flying Training was supplied with 25 Avro Ansons and 28 Airspeed Oxfords for twin-engined training purposes. Development of the S.13 was intended to replace those ageing types with a homegrown twin trainer.

AUTHOR'S COLLECTION



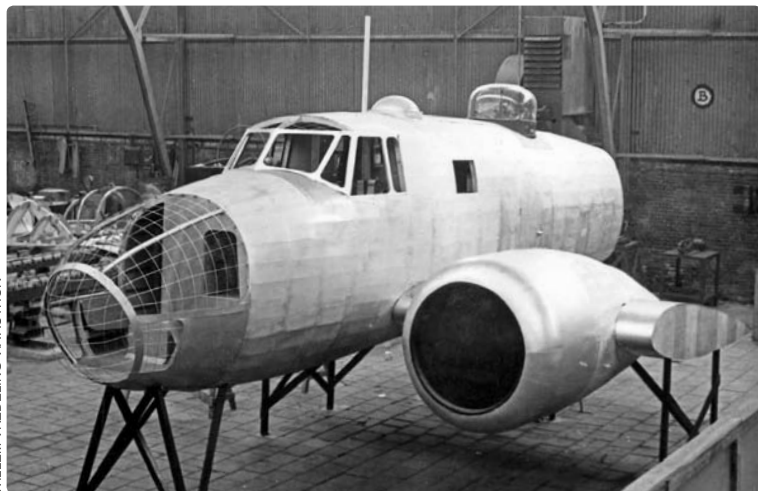


concepts were drawn up under the numbers 236A to 236G, with the early designs including a dorsal gun turret. As gunnery training was no longer a requirement, the latter had been deleted by the time Ontwerp 236G, the final design, had been completed. The later designs were for a passenger transport with a solid nose (rather than a glazed bomber nose) and a small cargo bay, and which could accommodate nine passengers and include a lavatory and a small cloakroom. By the time Ontwerp 236G had been finalised, however, the emphasis had swung from passenger transport to crew trainer, and included a glazed nose.

At Fokker's Amsterdam-Noord factory, work began on two S.13 mock-ups, the fuselage section of one of which was left uncovered to illustrate the

construction details. The second mock-up, fitted with inner wing sections and engine nacelles, had a fully covered fuselage and a dorsal gun turret, but the latter was ultimately removed.

An all-metal twin-engined monoplane with fabric-covered control surfaces and a tricycle undercarriage, the S.13 had the intended role of a multi-engined five-man crew trainer capable also of being used for aerial photography and the transport of cargo, passengers and parachutists. Power was to be provided by a pair of 600 h.p. Pratt & Whitney Wasp air-cooled radial engines, or alternatively two British Alvis Leonides radials or two French Renault 12S O2 air-cooled inverted V12 engines (based on the German Argus As 411 and as used for the Dassault Flamant). For the



**LEFT** With the configuration of the new twin-engine trainer decided, two mock-ups were built at Fokker's factory at Amsterdam-Noord. This is the second mock-up, which was initially fitted with a dorsal turret, as seen here, to be incorporated into production models for gunnery training, but it was ultimately deleted.

**BELOW** Construction of the S.13 prototype at Amsterdam-Noord in 1949. In the background are one of the two S.13 mock-ups (right) and a mock-up of the forward fuselage and centre section of the S.14 Machtrainer, which would make its first flight in May 1951.



**BELOW** On its completion the sole S.13 was registered PH-NDW, which marks it wore on an overall natural-metal finish with a small Dutch tricolour flag on the fin. The type was initially given the name Universal Trainer, but the new moniker was soon dropped, S.13 being used during its development. Artwork by SRECKO BRADIĆ © 2017

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**ABOVE** The completed S.13, with its registration on the rear fuselage, at Schiphol, from where it made its first flight on March 11, 1950. Final assembly had been undertaken at Schiphol, the airframe having been transported by barge from the Fokker factory at Amsterdam-Noord. A new Fokker factory was opened at Schiphol in 1951.

training of bomb-aimers the type could be fitted with a glazed bomber-type nose.

Of the preliminary studies, Ontwerp 236F was selected as the final model for the S.13, Fokker christening the type Universal Trainer, although this only ever appeared in the company brochure. Extensive windtunnel studies of the new type were undertaken by the *Nederlands Luchtvaart Laboratorium* (NLL — Netherlands Aeronautical Laboratory), which also performed ditching trials using a 1/5th-scale wooden model, similar to those later made with an S.14 Machtrainer model.

With a view to using the type in Netherlands New Guinea (a Dutch colony until 1962), plans were put forward to equip the S.13 with wing-mounted floats. This floatplane version was promoted by Fokker in a company brochure as the S.13W, with the floats of a Fokker T.VIIIW standing in for those to be prospectively fitted to the S.13. Ultimately the type was never fitted with floats, and none of the latter was ever built.

### CUTTING METAL

With the NIV and Fokker agreed on the final design, construction of the first S.13 prototype began. On its completion the aircraft was put on the Dutch civil aircraft register as PH-NDW on December 10, 1949. By March 1950 the prototype was ready for its maiden flight, which took place on the 11th of the month with Fokker test pilot Hugo Burgerhout at the controls. Burgerhout

flew the aircraft solo for 32min with no significant problems, and later that day made a second solo flight of 35min.

Having passed its first major milestone, the S.13 was deleted from the civil register on April 3, 1950, and assigned the military serial D-101. At the same time, standard Dutch military red/white/blue/orange roundels were applied to the wings and fuselage. Over the next three years some 285 S.13 test flights were made, often more than once a day. Initially the test flying was strictly supervised by Fokker's own flight department, but the NLL joined the programme from the 94th test flight. One of the regular NLL team members during the S.13's test programme was Meyer Drees, who would go on to work on the development of the NHI Kolibrie ramjet-powered light helicopter.

The biggest problem experienced during the early test phase of the S.13 was disturbed airflow in the suction tubes for the engines' carburettors. It took a great deal of investigation and testing before the problem was solved and the Pratt & Whitney Wasps could be run at full power.

Demonstration flights for prospective S.13 customers began on March 7, 1950, the prototype's 21st flight being a demo for the Israeli Defence Force, with Dr Erich Schatzki as observer and adviser. Schatzki was a known quantity at Fokker, having been responsible for the design of the company's D.XXIII fighter before the war.



**LEFT** Fokker test pilot Hugo Burgerhout beams from the cockpit of PH-NDW after the S.13's maiden flight on March 11, 1950. Burgerhout was a former Dutch Navy pilot who had seen combat while flying Dornier Do 24 flying-boats in the Netherlands East Indies during the Second World War.

**BELOW** In April 1950 the S.13 was removed from the Dutch civil register and given the military serial D-101. Accordingly, the civil registration was removed and replaced by a standard red, white, blue and orange Dutch roundel, the aircraft retaining its natural-metal finish and the tricolour on the fin. Artwork by SREČKO BRADIĆ © 2017

On June 25 the same year the prototype was demonstrated at Deurne for the Belgian Air Force. In April 1952 the aircraft returned to Belgium to make another bid for orders at Melsbroek. Neither demonstration yielded the desired result as the Belgians ultimately selected the British Percival Pembroke, which remained in service with the Belgian Air Force until the 1970s.

In 1951 the S.13's military markings and serial were removed, and on June 15 of that year the aircraft was put back on the Dutch civil register as PH-NEI. It was later also repainted in an attractive red/white/natural metal colour scheme. A Certificate of Airworthiness for test flying and demonstrations was issued for the aircraft on June 28, 1951, on the strict condition that only Fokker test pilots Burgerhout and Gerben Sonderman were authorised to fly it. If another pilot flew it either Sonderman or Burgerhout had to be present on the flightdeck. However, when the aircraft was later hired to Schreiner Aerocontractors and the *Rijksluchtvaartschool* (RLS — State Civil Aviation School), this restriction was lifted.

Burgerhout flew the majority of the early S.13 test flights, with Sonderman accruing a good number later, some with his friend Prince Bernhard. Along with the S.14 Machtrainer, the S.13 participated in the Paris Air Salon in 1951. The Machtrainer

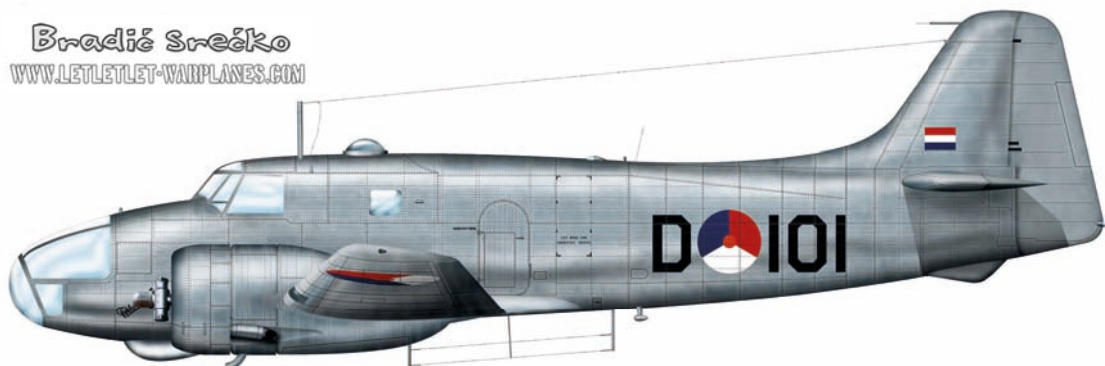
was exhibited at the Grand Palais in the centre of Paris, and the S.13 was ferried by Burgerhout to Le Bourget on June 29 that year, with five Fokker employees aboard for its 157th flight. Two days later Burgerhout flew a 5min display routine that attracted very little attention from the public or press. Burgerhout returned to Schiphol with his passengers the following day.

On July 29, 1951, Burgerhout demonstrated the S.13 at the *Internationaal Lucht Show Ypenburg* (ILSY) military and civil aviation show, where he performed a 22min display flight. Test flying continued between the promotional flights, including trials set against the requirements laid down in *Air Publication 970*.

## MILITARY TRIALS

On March 21, 1952, bomb-release simulation flights were undertaken with the S.13 for the *Luchtstrijdkrachten* (LSK — Air Force Command), with small inert practice-bombs fitted beneath the wings. The first test failed owing to a faulty release switch, noticed after a check-run when no impact marks or smoke were observed. The S.13 landed and, after repairs to the switch were completed, the bomb-test was resumed successfully. Although no direct hits on the target were made, it was concluded that "the S.13 is

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fully suitable for practice bombing". Nevertheless, despite the fact that the LSK considered the S.13 "a good aircraft", neither military nor civil orders were forthcoming for the type.

Numerous promotional flights continued to be made over the next few years, including flight 117 on March 3, 1951, for Israeli civil aviation interests, flight 144 on May 9, 1951 for a report on the type by British magazine *Flight's* Editor and pilot Maurice Smith, and flights 145–147 and 154 the same month for a group of pilots and observers from the *Marineluchvaartdienst* (MLD — Dutch Naval Air Service). Flight 158 on July 9, 1951, was a demonstration for KLM, despite the airline having made it quite clear that it was not interested in the S.13. More flights were undertaken for the LSK in late September 1951, and flight 193, on December 6, 1951, was for a delegation from the USAF.

In early May 1952 the S.13 was taken on a tour of Dutch airfields and bases as a means of introducing the type to prospective buyers. The pilots for this series of flights were Burgerhout, Sonderman and Moll. The following month the military airbases at Leeuwarden and Soesterberg were visited again. On two occasions (flights 247 and 248, on May 28 and June 2, 1952, respectively), pilots of the Brazilian Air Force were invited by an increasingly desperate Fokker to fly the S.13. Flights 254–258 were evaluation flights for Nato (undertaken by *Armée de l'Air* pilots), the USAF and American manufacturer Fairchild. More Nato evaluation flights (Nos 282–285) were made by French, German and American pilots during May 11–13, 1953. Frustratingly for Fokker, none of these extensive demonstration and evaluation flights led to a single production order.

A chink of light appeared when Fokker Rio, the company's subsidiary in Brazil, and Fairchild in the USA, expressed an interest in the possible licence production of the type. Two flights were made by a Fairchild test pilot in September 1952,

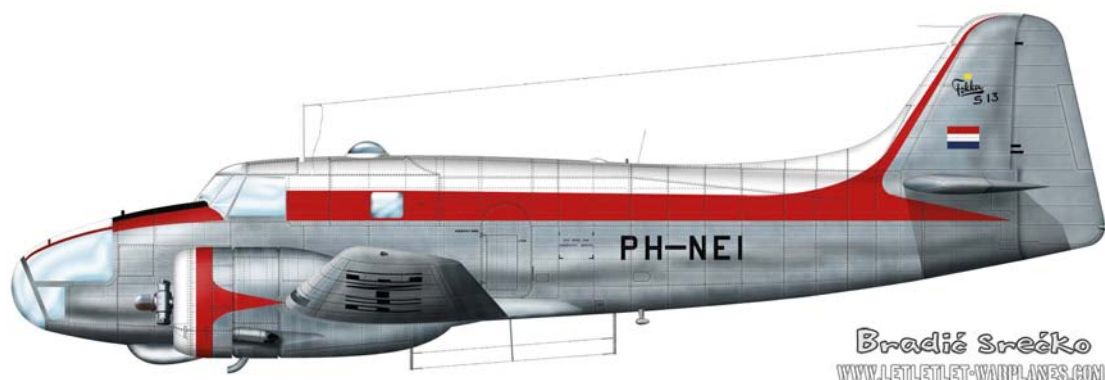
**ABOVE** *The S.13 aloft in its military markings. The trainee bombardier and an observer were stationed in the nose, which was framed by steel tubes and enclosed by six transparent panels which afforded excellent visibility. A folding table was fitted to the starboard side of the "greenhouse", with a panel for instrumentation mounted on the port side.*

when the type was also flown by several USAF pilots, including Col Frank "Pete" Everest, then the fastest man on earth after he had flown the Bell X-2 rocket-powered aircraft at twice the speed of sound. The USAF in Europe (USAFE) was interested in the S.13 as part of an offshore procurement programme, but Fokker could not meet its demands for quick delivery, and the Beech D18S (C-45) was purchased instead.

### THE S.13 IN LIMITED ACTION

The sole prototype saw some degree of active service during the flooding of the Dutch province of Zeeland following a major storm on the night of January 31–February 1, 1953. The S.13 made a flight from Soesterberg to Gilze-Rijen airbase, including a detour over the flooded areas, with Princess Juliana aboard. Over the next few days the aircraft was used for photographic survey work and for the dropping of food, sandbags and medical supplies. It was also used for observation flights by the *Rijkswaterstaat* (National Water Ministry). During February 3–9, 1953, some 18 flights (Nos 259–276) were made by the S.13 with Sonderman or Burgerhout at the controls. These flights were not entered into Fokker's official flight reporting system, as the aircraft was transferred back to the military, with roundels and its serial D-101 reapplied, although the civil registration PH-NEI was maintained and held open for the S.13.

By the spring of 1953 the aircraft's flight programme was drawing to a close, and the S.13's final test flights were completed during March 18–May 13, 1953 (flights 277–285), the sole



**ABOVE** In June 1951 the S.13 was put back on the Dutch civil register as PH-NEI. The aircraft also received an attractive new colour scheme, the upper fuselage, dorsal fairing and leading edge of the fin being painted white. The lower fuselage remained in natural metal, separated by a red cheat line. Artwork by SREĆKO BRADIĆ © 2017

prototype having accumulated almost 220 flying hours. Clearly the S.13 was not what the customer wanted. While it was true that new and surplus American twin-engined aircraft such as the Beech D18S/C-45 were being offered at bargain prices, Fokker still felt there was a small but significant market for the S.13. Britain's Percival Pembroke was comparable in size and performance to the S.13, but whereas the former was a dedicated light passenger and cargo aircraft that could be used for crew training and aerial survey work, the S.13 was a dedicated crew trainer with a secondary role as a small passenger aircraft.

The S.13's awkward high-placed entry point into the cabin and its smaller circular-section fuselage were clear disadvantages when compared to the high-wing Percival aircraft, with its fuselage that much closer to the ground. Although the Pembroke arguably cannot be regarded as a highly successful type, with 132 examples built, it did enter production, while the S.13 never progressed beyond a sole prototype.

Dutch national airline KLM had already made its position regarding the S.13 extremely clear, pointing out that a dedicated crew-training type was simply not required; indeed, the airline never purchased one from any manufacturer. Interest from the military top brass at the LSK had always been lukewarm at best and its final choice was the Beech C-45. The Dutch Navy had shown some interest in the S.13, not only as a trainer but also as a target tug; but again, the Beech C-45 was deemed more economical. Fokker's board of directors finally had to face the fact that there was no market for the S.13, and had no choice but to terminate the project.

The prototype did ultimately see service as a target tug, but strictly under the provisions of a civil contract. In 1954 Schreiner Aerocontractors of Amsterdam leased the S.13 from its owner, the NIV, with a view to undertaking daily 1hr towing flights near Den Helder for the training of anti-aircraft gunners, during which it would fly over the Dutch northern coast. These flights

## FOKKER S.13 DATA

**Powerplant** 2 x 600 h.p. Pratt & Whitney  
R-1340-S1H1-G Wasp radial engines

### Dimensions

Span	19.2m	(63ft 0in)
Length	13.6m	(44ft 7½in)
Height	5.5m	(18ft 5¼in)
Wing area	46m²	(495ft²)
Wing loading	125kg/m²	(25.6lb/ft²)
Power loading	4.8kg/h.p.	(10.6lb/h.p.)

### Weights

Empty	4,185kg	(9,225lb)
Effective load	1,590kg	(3,505lb)
Maximum t/o	5,775kg	(12,730lb)

### Performance

Maximum speed		
at 2,440m (8,000ft)	355km/h	(220 m.p.h.)
Cruising speed		
at 3,600m (11,800ft)	315km/h	(195 m.p.h.)
Landing speed	111km/h	(69 m.p.h.)
Climb		
to 1,000m (3,300ft)	2.9min	
to 2,000m (6,600ft)	6min	
to 3,000m (9,800ft)	9.4min	
to 4,000m (13,100ft)	13.7min	
Service ceiling	6,500m	(21,300ft)
Take-off distance		
on hard runway	300m	(990ft)
Maximum range	2,000km	(1,250 miles)

Source: June 1950 Fokker S.13 brochure

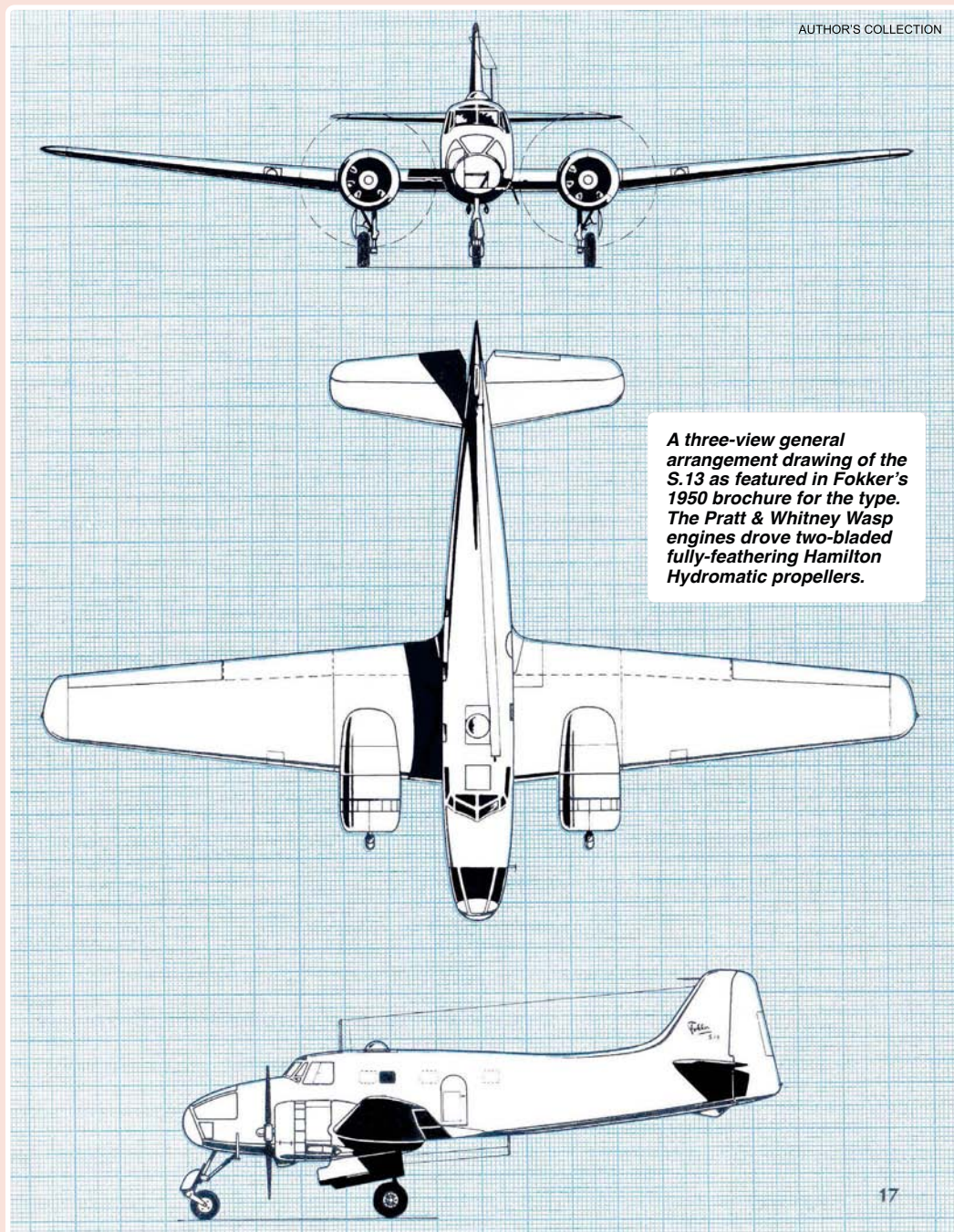
were made from Texel during March 17–August 29, 1954, some 80–100 being completed.

Still airworthy in 1957, the S.13 was offered to the Rijksluchtvaartschool at Eelde airport for the training of navigators, but the programme lasted only a few flights before it was realised that the Beech D18S, without the S.13's cumbersome entry point, was far more suitable. The S.13 was then returned to Fokker, where it was left to gather dust in the corner of the company's flight hangar. In one last attempt to find a useful home for it,



## DOUBLE STANDARD : THE FOKKER S.13

THE FOKKER S.13 (depicted here in a company brochure drawing) was a twin-engined all-metal low-wing monoplane with a fully retractable hydraulically-operated tricycle undercarriage. In crew-trainer configuration it could accommodate six people including the pilot and copilot. The fuselage was divided into a nose compartment for the two pilots, a main cabin and a rear compartment. All were separated by bulkheads fitted with doors. The all-metal three-piece wing comprised a central section and two easily detachable outer sections. The light-alloy ailerons were fabric-covered. Each wing was fitted with two hydraulically operated split flaps. The wings contained three fuel tanks of 200lit (45 Imp gal) capacity each. The elevators and rudder were made of light-alloy covered with fabric.







**ABOVE** The nose section of the S.13 on display at the Luchtvaart Museum on the West Frisian island of Texel in May 2016. Other surviving parts of the sole prototype include the empennage, the fin and tailplane of which have been severely cropped, as seen **RIGHT** while at the Technical University at Delft. The remains of the tail were donated to the Aviodrome museum at Lelystad, where they remain today in storage.

the aircraft was offered to the NLL to replace the organisation's obsolete Siebel Si 204D, PH-NLL. However, the NLL opted to acquire Beechcraft Queen Air PH-NLR instead. The S.13's civil registration, PH-NEI, was struck off the Dutch civil register on June 10, 1961.

## THE END OF THE ROAD

With no further interest in the type and no more funding to keep it flying, the S.13 was offered to the Technical University at Delft in 1961 as an instructional airframe. The outer wing panels were soon removed and scrapped, and the wing centre section was later separated from the fuselage and partly scrapped. One engine and half of the wing centre section were moved to the *Militaire Luchtvaart Museum* (MLM — Military Aviation Museum) at Soesterberg, where the parts were put in storage.

When the MLM was closed and replaced by a new *Nationaal Militaire Museum* (NMM — National Military Museum) at Soest, these parts were donated to the Aviodrome museum at Lelystad airport. The fuselage at Delft was later dismantled further and the tail section was removed. The centre fuselage section was later



dismantled and scrapped. With only the nose and tail section remaining, the university later decided to keep the tail and scrap the nose section. Thanks to Fokker employee Piet Wey these last remains of the sole S.13 were saved and transported to the Fokker Apprentice School at Schiphol-Oost, to be fully restored into a static exhibit. By October 1993 the restoration was complete and the nose section was donated by Fokker to the Fokker Friendship Association. Later it was donated to the small aviation museum at Texel Airport, where it is still on display today.

The tail section remained at the university at Delft for some years. Unfortunately, in order to store the rear fuselage and empennage, the tailplane and fin were drastically cropped. These final mementoes of one of Fokker's rare mis-steps were ultimately donated to the Aviodrome at Lelystad, where they remain in storage.







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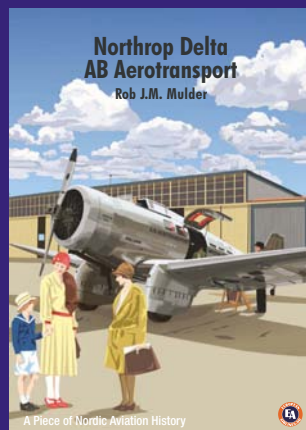


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**T**HUNDERSTORMS SWEEPED through the Tampa Bay area in Florida on the night of September 13, 1945, making the tarmac surfaces at the city's Peter O. Knight Airport slick with rain-water. In command of National Airlines Flight 22 from Miami, with 11 passengers and a crew of three aboard, was Capt Maston G. O'Neal. As he settled his Lockheed L-18 Lodestar on to the notoriously short 3,500ft (1,060m) runway that ended at a seawall, braking action proved useless. In an era when little was understood about the physics of hydroplaning, O'Neal instinctively performed the only manoeuvre at his disposal that could save lives — he groundlooped the aircraft in an attempt to reduce speed before reaching the seawall. He almost succeeded. The Lodestar broke through the runway barrier, coming to rest with the aircraft's nose on the seawall and the aft fuselage in the water. All passengers and crew escaped safely. There were no fatalities or serious injuries, but the Lodestar was written off.

Many people believed that O'Neal had done a skilful job of saving lives. George Theodore "Ted" Baker, the president of National Airlines, was not one of those people. He fired O'Neal. In doing so, he created a cause for the disgruntled employees of National Airlines to rally around; a symbol of everything that was wrong with the relationship between management and labour at the company. It was the opening shot fired in a battle that would nearly destroy one of America's great airlines.

### THE BIRTH OF NATIONAL

At its genesis in 1934, National could hardly be described as a great airline. It was the result of a long-shot bid by Ted Baker to acquire authority to fly one of America's shortest contract airmail routes. A native of Chicago, Baker, who had served in the Tank Corps during the First World War, was living in the Windy City in the early 1930s, during America's Great Depression. This was the era of Prohibition in the USA, when the sale of alcoholic beverages was illegal and Chicago suffered unwanted notoriety as a haven for organised crime. Baker was a partner in a firm which financed automobile, boat and aircraft purchases. His company also repossessed these vehicles when payment was not forthcoming.

Baker acquired his pilot's licence and, in addition to his loan business, began an association with a firm called National Airline Taxi System, based at Chicago Municipal Airport (later renamed Midway). The company, founded in 1929, was under the direction of general manager Don K. Franklin. National Airline Taxi System's fleet consisted of two Ryan monoplanes and a Butler Blackhawk biplane, all of which were

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ABOVE & INSET: AUTHOR'S COLLECTION / DC-7B: JON PROCTOR COLLECTION

**ABOVE A 1940 magazine advertisement for National Airlines' Lodestar services, by then stretching from the southern tip of Florida to New Orleans. OPPOSITE PAGE, TOP National Airlines DC-7B N6201B sails majestically above the clouds after the airline's acquisition of the type in 1957. OPPOSITE PAGE, INSET Ted Baker, of whom Fortune magazine said in 1960: "Crisis was Baker's natural environment . . ."**

single-engined aircraft. The company's business consisted of flying customers on weekend getaways and charter flights. Allegedly, some of those charters were to Canada, where clients could purchase and enjoy high-quality liquor. It was rumoured that Baker also flew cases of bootlegged liquor back to the USA on his return flights, something he never repudiated, perhaps only to enhance his mystique.

Prohibition was repealed on December 5, 1933, putting Baker in need of a fresh source of income. An opportunity presented itself early the following year. In 1934, in the aftermath of a political scandal, all of the USA's airmail contracts were once again put up for bid to civilian operators and, on each route, the new contracts would be awarded to the lowest bidder who was able to comply with government regulations.

Baker and Franklin made a bid on two of the routes. They were not successful in acquiring a Cleveland—Nashville contract, but their bid for carrying the mail at a rate of 17c/mile won them a cross-state route in Florida. With their first pilots and a batch of spare parts loaded aboard the two Ryans, they flew to St Petersburg's Albert Whitted Airport, removed the word "Taxi" from the titles on the aircraft and set up shop as



**LEFT** National Airlines groundcrew load mail aboard a Lockheed Lodestar with the help of a company tricycle. Note the refuelling truck, also emblazoned with full National Airlines titles. National acquired the first of its total of 17 Lodestars in November 1940.

**BELOW** With its c/n, 2039, stencilled on the nose, Lodestar NC25687 is probably seen here in California before its delivery to National on November 6, 1940. The type was brand new, the first purpose-built L-18 having made its maiden flight in February 1940.

National Airlines System (the word "System" was dropped in 1937). Service was inaugurated over AM (Air Mail) Route 31 between St Petersburg and Daytona Beach via Tampa, Lakeland and Orlando on October 15, 1934. Franklin soon left the enterprise and thereafter National Airlines was controlled by one man — George T. Baker.

National's route linked the Tampa Bay area with the airmail and passenger service operated by Eastern Air Lines at Daytona Beach. One of the USA's "Big Four" airlines at the time, Eastern operated flights up and down the East Coast from New York to Miami. Letters and packages mailed by customers in cities along National's route were transported to Daytona Beach, where they were transferred to Eastern flights in order to reach their final destination.

Baker was to become a perennial thorn in the side of Eastern's feisty general manager, Capt Eddie Rickenbacker, the famous First World War fighter ace. Both men were known for their volatile tempers. Rickenbacker became President of Eastern in 1938. Passengers began taking advantage of the service offered by National Airlines and the Ryans were eventually retired in

favour of secondhand Stinson Model T trimotors.

National's route system was temporarily extended on November 19, 1934, from Daytona Beach northward to Jacksonville, while Eastern's service was suspended at Daytona Beach until the airport there could be upgraded to accommodate Eastern's Douglas DC-2s.

In 1937, much to the consternation of Rickenbacker, the Post Office awarded National Airlines a contract to fly between Tampa and Miami, enabling customers and mail from Tampa, Sarasota and Fort Myers to connect with Pan American's Caribbean and Latin American flights in Miami. Naturally Rickenbacker felt that Eastern should have been selected. National now had a meandering route from Miami to Jacksonville via St Petersburg and Tampa. With the new service came new aircraft in the form of ten-passenger twin-engined Lockheed L-10 Electras.

### CREATING — AND FILLING — THE GAP

When Eastern resumed flying into Daytona Beach in 1937, National's system was once again cut back to that city as a terminus from that July, the airline no longer being permitted by the Post







PJM COLLECTION

Office to fly all the way to Jacksonville. National made a successful bid on the airmail contract from Jacksonville to New Orleans via intermediate points and service was inaugurated over this route on November 1, 1938. But now National was stuck with operating two disconnected segments, one winding its way from Miami to Daytona Beach, the other from Jacksonville to New Orleans, with a 93-mile (150km) gap separating the two routes.

In 1938 the American government created the Civil Aeronautics Board (CAB) to regulate the USA's airline network. No longer would the Post Office auction off contracts. The latter would still have a say over which routes required airmail service but passenger traffic had now become the primary concern of the government. The CAB accordingly awarded "grandfather rights" to airlines that were operating at the time of the Board's creation, certifying that those companies were established and authorised to continue operating their routes originally granted by the Post Office. These airlines, including National, would grow to form the basis of the USA's "trunk" airline system.

One of the first tasks the CAB undertook was to address National's disjointed system. Baker applied for authority to reinstate service between Daytona Beach and Jacksonville, and thus connect the two parts of his network. Rickenbacker vehemently objected, but the CAB ruled in National's favour. The two segments were joined together and National moved its headquarters and maintenance base to Jacksonville in 1940.

Baker rather liked being thought of as a swashbuckling pirate stealing business from Rickenbacker, and christened his airline

**ABOVE** Another photograph of NC25687, again probably before delivery, this time showing off the clean lines which gave the Lodestar a distinct speed advantage over the bigger — and considerably more comfortable — DC-3. Note the legend "The Buccaneer Route" above the windows on the fuselage and the Air Mail routes (31 and 39) marked on the starboard fin.

the "Route of the Buccaneers", incorporating the image of a pirate with sword in hand as the company symbol. Everything seemed to be coming together for National, even though it was still comparatively "small fry" among America's certificated airlines.

### LODESTARS & LABOUR TROUBLES

Introduced to the nation's airways in 1936, the exceptional Douglas DC-3 quickly proved itself able to turn a profit on revenue generated solely from carrying passengers. It soon became the standard aircraft for major carriers around the world, but Baker apparently felt that its 21-passenger capacity was too big for his needs. Instead, he decided to buy Lockheed's ultimate twin-engined airliner, the 14-passenger L-18 Lodestar. National would earn the distinction of being the only major airline in the USA never to operate the ubiquitous DC-3.

Unlike the DC-3, with its 2 + 1 seating arrangement (later expanded to 2 + 2 by most airlines), the Lodestar was equipped with a single row of seven seats on each side of the aisle, the mainspar running across the front of the cabin, requiring two steps up to enter the cockpit. Ungainly as it appeared, the Lodestar's advantage was speed. It cruised at 220 m.p.h. (355km/h), compared to the DC-3's more stately 170 m.p.h. (275km/h).





**ABOVE** National's Executive Secretary Robert Forman (third from right) hands the Mayor of St Petersburg, Florida, a letter of congratulation from New York City's Mayor LaGuardia and Jacksonville's Mayor Whitehead, expressing goodwill on the airline's newly-established link between the three cities, at Pinellas Army Air Field in early 1944.

Behind the scenes at National, all was not well. The pilots wanted to unionise but Ted Baker would have none of it. It was his airline and his employees would do as he said in exchange for what he paid them, and that was that. In his book on National, *The Anatomy of an Airline* (Doubleday, 1970), Brad Williams describes Baker as "blustery, domineering, blunt-speaking and sometimes abrasive". Author Robert Serling called him a "trigger-tempered wheeler-dealer", and David Behncke, president of the USA's Air Line Pilots Association (ALPA) in the late 1940s, did not mince words when he stated that Baker was "opinionated, obstreperous and self-centred". One of Baker's former employees, however, reported that he could "charm the socks off everybody . . . if he wanted to".

Some might argue that Baker's stubborn temperament, like Rickenbacker's, was the stuff that airline pioneers were made of and thus part of the reason for their companies' success. But Baker's inability to build bridges with his own employees almost brought an end to his airline.

In the early days Baker would fire any pilot who was a union organiser. Attempts at negotiating for the right to unionise were met with a brick-wall stance. Then, on December 5, 1941, two days before Pearl Harbor and America's entry into the war, National pilots sat down with Baker one more time in an attempt to reach an agreement over acceptance of ALPA as their bargaining agent. This time the pilots had the upper hand. Pan American-Grace Airways (known as Panagra)

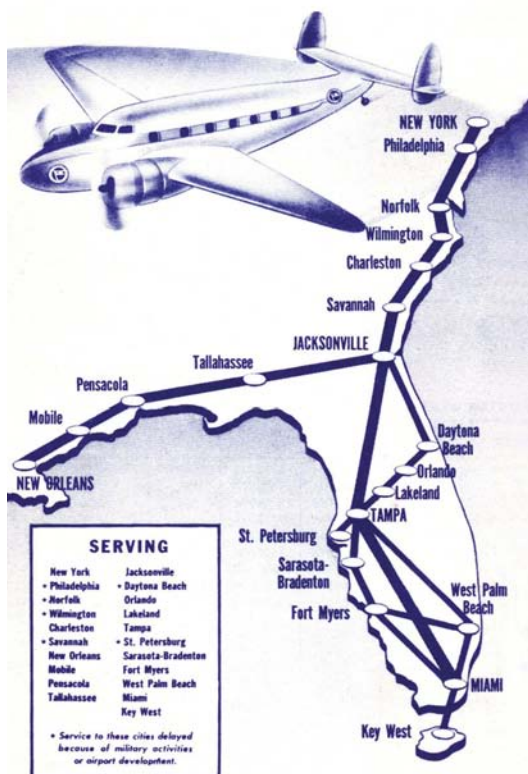
was expanding rapidly in South America, under the direction of the American government, in an attempt to counteract the German influence among airlines on the continent. Panagra needed every pilot it could enlist, and the company's chief pilot, Dave Disher, told the National pilots that he would be waiting for them outside their meeting. If Baker refused to let them unionise one more time, Disher would hire all of them for Panagra on the spot. Baker capitulated and the pilots, now members of ALPA, negotiated a contract. But not much changed.

In 1942 Baker declared that "wartime emergency" conditions were forcing him to pay pilots a lump sum each month instead of the hourly wage they were supposed to earn based on flight time. He was forced to relent, however, after the CAB threatened an investigation into his payroll practices. For example, Baker fired a copilot named R.D. Fordyce just as his probationary period with the company was about to end. He then re-hired him as a brand new copilot, in order to keep him from transitioning to the post-probation ALPA-negotiated pay scale.

### ROUTE EXPANSION

In February 1944 the CAB handed Baker a gift that would bring him into the major leagues. Authority was granted for National Airlines to operate between New York and Miami via several important intermediate cities. Before this award, Eastern had held a monopoly in the New York—Miami market. Some say that it





AUTHORS COLLECTION

**LEFT** An extract from a 1944 National Airlines map showing the company's routes within Florida and stretching west to Mobile and New Orleans, and northwards up the East Coast to New York via Savannah, Georgia; Charleston, South Carolina; Wilmington, North Carolina; Norfolk, Virginia; Philadelphia, Pennsylvania and New York City.

After the war, in February 1946, Baker got the jump on Rickenbacker when National introduced 46-passenger four-engined Douglas DC-4s into operation, which had the range to offer a non-stop service between New York and Miami for the first time. Still stuck with twin-engined DC-3s, Eastern would not introduce DC-4s on the route until several months later. Of course Baker named his new non-stop service "The Buccaneer".

The CAB handed National another plum in 1946, the year that Baker moved the company's headquarters from Jacksonville to Miami. This award infringed on the territory of another airline pioneer, Juan Trippe of Pan American. National gained authority to serve Havana, the Cuban capital, non-stop from both Miami and Tampa, and from New York via intermediate points. The following year Baker and Rickenbacker both put modern pressurised equipment into service non-stop between New York and Miami; Eastern introduced Lockheed L-649 Constellations in June 1947, while National launched Douglas DC-6 flights the following month.

Unfortunately, employee relations at National had not improved. The pilots contended that Baker blatantly ignored their contracts by violating seniority provisions and failing to comply with negotiated work rules. Other employee groups were similarly dissatisfied, and on January 26, 1948, the airline's reservation staff and ticket agents went on strike over wage issues and working conditions.

In the meantime, and to make matters worse,

**With the substantial expansion of its routes from 1944, National undertook a programme of modernisation, introducing the most up-to-date airliners on its services, including, from July 1947, the 58-passenger Douglas DC-6, redesignated with Baker's characteristic hubris as the "Buccaneer 400", as seen on the forward fuselage.**

GEOFFREY THOMAS VIA JON PROCTOR





**ABOVE** The arrival of new Vice-President Walter Sternberg in 1949 led to a revised marketing strategy for National, with "The Buccaneer Route" supplanted by "The Airline of the Stars", and a brand new colour scheme. Delivered in April 1946, DC-4 N33683 (c/n 42922) served with National until late 1952, when it was sold to Japan Air Lines.

Baker had obstructed attempts by ALPA to arbitrate the case of Maston O'Neal, the pilot he had fired in 1945. After a four-member System Board of Adjustment — two members of which represented the pilots and two members of which represented the company — became deadlocked over the issue, the National Mediation Board (NMB), a government agency, was called in to break the stalemate. Baker refused to approve the NMB's selection of neutral arbitrators and instead insisted that the President of the USA, no less, appoint a three-member commission to determine the pilot's fate. That was not going to happen, President Truman refusing to become involved in a private company's labour dispute.

According to ALPA's then-president, David L. Behncke, as reported in *Aviation Week* magazine at the time, Baker announced that "agreement or no agreement, mediation board or no mediation board, law or no law, Maston O'Neal [will] never again work for the company," and that "O'Neal is fired and he will stay fired". This was the

straw that broke the camel's back for the pilots; Baker's obstinacy had given them the excuse they needed to strike. They walked out on February 3, 1948, ostensibly over Baker's refusal to honour contractual rules about determining whether or not a pilot had been fired for just cause.

While fighting the pilots on one front, Baker also had things to worry about on another. The DC-6 was universally grounded between November 11, 1947, and April 1, 1948, in order to correct a design flaw that had resulted in a number of in-flight fires. The grounding coincided with National's peak winter-traffic period, greatly affecting the company's competitive position. It also appeared that the unionised pilots' campaign asking people not to fly National (see opposite page) was working. Load factors declined precipitously and the company was losing money hand over fist.

On September 26, 1948, the CAB instituted an unprecedented investigation into National Airlines to determine whether or not its network should be dismembered and its routes doled out

**With the new colour scheme, National's "Buccaneer 400s" became "DC-6 Stars", and a pair are seen here at Miami in July 1959. The nearest, DC-6B N8222H (c/n 43739), was delivered to National in October 1952 and wears the post-1949 colour scheme, with the "Airline of the Stars" legend applied on both front and rear of the fuselage.**

GEORGE HAMLIN COLLECTION VIA AUTHOR





# "ONE HELL OF A BIG FENCE . . ."

## MASTON O'NEAL AND THE 1948 PILOT STRIKE



MASTON GREENE O'NEAL Jr was 27 years old when he groundlooped his National Airlines Lodestar in Tampa on September 13, 1945. Not one of the passengers or crew members aboard his flight was seriously injured. Shortly after the accident, Ted Baker fired O'Neal for "cracking up" one of his aircraft. That action would be little more than a footnote in America's aviation history were it not for the fact that another National Lodestar, flown by a different crew, was involved in an accident at Lakeland two weeks later. This time there were two fatalities and several injuries.

A week after that, another National Lodestar, with yet another crew, made an emergency wheels-up landing near Melbourne, Florida, after an engine caught fire in flight, resulting in the flight attendant being seriously injured. In each instance, the aircraft was written off. The second and third Lodestar incidents, occurring less than three weeks after the Tampa event, were blamed on pilot error. But of the six men on the flightdecks of those three aircraft, only O'Neal was fired.

A former college football player, O'Neal was "movie-star handsome", according to the wife of one of his fellow pilots. In contrast, Baker, described as a "skirt chaser", was a short, pudgy middle-aged man who chewed cigars. Rumour had it that Baker did not like O'Neal because of the younger man's success with the ladies.

According to O'Neal himself, interviewed by George E. Hopkins for his 1969 book *Flying the Line: The First Half-Century of the Air Line Pilots Association*, the night after the Tampa crash both O'Neal and Baker wound up at the same gambling club in Miami. O'Neal was on a date with the secretary of one of Baker's friends and recalled:

"I was single and so was she. It later turned out that this friend of Baker's was sweet on her, but I didn't know it at the time. The stories that I was romancing his [Baker's] wife, who was a wonderful, lovely lady, are just crazy gossip.

"The day after the crash at Tampa, I was back over at Miami, where there was an illegal gambling club. I had a date with this girl that night, and I was playing at the craps table; there across the table was Ted Baker, slapping down a 'five' [\$5 bill] while I was slapping down a 20. He gave me a funny look. I guess he thought I should have been back in my room doing penance for breaking one of his airplanes. Here I was out having a good time with one of his buddies' secretaries, and he obviously didn't like it. That is where those woman stories came from, and that's the absolute truth.

"ALPA didn't go out on strike because of me. They went out because Ted Baker treated the pilots like dogs! But you can't strike because somebody abuses the hell out of you; you've got to have a legal reason. My firing was the only legal reason ALPA had for a strike. Little pebbles, if you pile them up long enough, make big fences, and there was one hell of a big fence between Baker and the pilots."

With the pilots refusing to fly, Baker saw this as his opportunity to break the union once and for all.

There were plenty of qualified pilots who had come back from the war only to find employment with one of the non-scheduled irregular carriers or in a different industry altogether. If they were willing to cross a picket line, this could be their opportunity to start a career with a "real airline". On February 7, 1948, National's attorneys informed the government's National Mediation Board (NMB) that the company would not participate in a final attempt to resolve the dispute because Ted Baker had discharged all of his pilots and was now seeking replacements.

Baker hired enough pilots to get National back up and running and before long had replaced his entire unionised pilot force with non-union aircrew. It was the first time that pilots had been hired to resume service at an airline while its own crew members were on strike. National's unionised pilots picketed the carrier and distributed leaflets proclaiming "DON'T FLY NATIONAL AIRLINES", these stating that the non-union pilots hired by Baker were not properly qualified. When the CAB increased the amount of subsidy that it was paying to National, the striking pilots saw this move as a ploy by the CAB to help National survive the strike and break the union. However, President Truman convened an emergency fact-finding board to look into the strike. Investigators determined that the striking pilots were not being unreasonable in seeking an impartial decision about the fairness of O'Neal's termination. The strike ended on November 25, 1948.

As for Maston O'Neal, he never did work for National again. In 1949 the NMB decided that O'Neal's discharge from the company back in 1945 had been a legal act on Baker's part. After leaving National, O'Neal went on to become a self-made millionaire in the construction industry in Florida and North Carolina. **DHS**



**ABOVE Maston O'Neal (centre) with Air Line Pilots Association colleagues during the National pilots' strike of 1948. Baker took particular exception to O'Neal, possibly as a result of jealousy, despite O'Neal having shown a high degree of airmanship by deliberately groundlooping a Lodestar on Tampa's short runway in bad weather in 1945.**



**ABOVE** Following National's programme of modernisation the company's Lodestars continued to work hard on the airline's services. Lodestar N45324 (c/n 2260), seen here in the post-1949 colour scheme, joined National in January 1946 and was sold in South America when the company finally withdrew the type in the spring of 1959.

to other carriers. Not for the first time, Ted Baker was in trouble.

Baker loved to gamble, and he loved even more to win. He saw his feud with the pilots as a game in which only one side could emerge victorious. Significantly, 1948 was a presidential election year in the USA and Baker felt that his success depended on the outcome of the election. If the pro-business Republican candidate, Thomas E. Dewey, won, he would have the nation's chief executive on his side. If the incumbent labour-friendly Democrat, Harry S. Truman, won, Baker's card game would be over. Dewey was favoured to win but on election night — November 2, 1948 — Truman managed an upset victory.

The strike ended on November 25, 1948, some 295 days after it had begun. Both sides agreed on a three-member NMB panel to resolve the dispute over O'Neal's termination. All striking pilots were brought back on to the payroll with full seniority, while only enough non-union

pilots to fill remaining vacancies were allowed to continue flying.

Developed from American Lutheran minister Frank Buchman's Oxford Group, Moral Re-Armament (MRA) was a Christian movement that espoused the use of "co-operation, honesty and mutual respect" to transform relationships between opposing parties, such as management and labour groups. The MRA's American training centre was located on Mackinac Island in Michigan, where Ted Baker wound up in late 1948. Claiming a change of heart after immersion in the group's programme, Baker announced to his employees that he had a new attitude toward his work force at National.

We can only speculate whether or not his "Damascene moment" at MRA was merely an opportunity for Baker to save face but, from that point forward, a truce was observed at National between management and labour; new contracts were negotiated and it became every employee's

**National DC-6B N8225H (c/n 43742) was lost under mysterious circumstances on January 6, 1960, when a bomb was allegedly detonated aboard Flight 2511, a 707 replacement service from New York to Miami. The wreckage was found in North Carolina. It is thought a suicide bomber was responsible, but the FBI case remains open to this day.**

MEL LAWRENCE VIA GEORGE HAMLIN







JON PROCTOR COLLECTION VIA AUTHOR

**ABOVE** Douglas DC-7Bs (a long-range version of the DC-7 with extra fuel tankage) arrived at National from late 1957. This example, N6202B (c/n 45363) was delivered to National on October 15, 1957, and operated with the airline until 1964, when it was acquired by the wonderfully-named Emerald Shillelagh Chowder & Marching Society.

common mission to build National Airlines into the best carrier operating along the highly lucrative East Coast routes.

#### FROM BUCCANEERS TO STARS

Baker knew that Rickenbacker's weakness was a lack of emphasis on in-flight service. Safety and reliability were paramount to Captain Eddie, with passenger comfort something of an afterthought. One legendary (and probably apocryphal) story relates the tale of an aircraft interior designer asking, in reference to fabric choices: "Mr Rickenbacker, what would you like to see on the seat cushions of Eastern's DC-4s?" Rickenbacker's reply — "Asses!"

In 1949 Baker hired Walter Sternberg to be his new Vice-President, Sales. Sternberg had previously worked for Rickenbacker, who had reportedly fired him over their differences about the quality of Eastern's in-flight service, which Sternberg thought was lacking. Baker swiftly tasked Sternberg with revamping National Airlines. The new man dumped the slogan "Route of the Buccaneers" and rechristened National "The Airline of the Stars", implying that celebrities of stage and screen, and even famous politicians, chose to fly National.

A new livery was created and the company's DC-6s now became "DC-6 Stars". "Star" flights featured a red carpet — bordered by chrome stanchions — rolled out between the gatehouse and the aircraft for boarding and deplaning, "symbolic of the luxury you enjoy onboard". Aircraft interiors were refurbished with plush seats and National's DC-6s featured recorded music playing over the public address system while the aircraft was on the ground. Two-by-two seating, an advantage over two-by-three seating

in part of Eastern's Constellations, was touted. Freshly cut flowers were placed aboard each Star flight and *filet mignon* dinners were served. The DC-6's aft lounge area was rechristened "The Starlight Lounge".

In conjunction with the new Star theme, the company photographed celebrities boarding and deplaning its aircraft, from Zsa Zsa Gabor to the Shah of Iran. Sternberg negotiated with Miami Beach hotels to offer package deals featuring combined air fare and discounted hotel rooms during the summer months, Florida's "off season". Christened "A Millionaire's Vacation on a Piggy Bank Budget", the promotions were a hit.

With improved employee relations and an emphasis on service and value, National's fortunes began to change. As passengers returned, income improved year-on-year. The CAB officially dropped its dismemberment case against National on March 16, 1951. It was obvious that the company had rebounded from the dark days of 1948 and was now an integral part of the nation's air transport system.

In an independent appraisal of the airline by the Selig Altschul Aviation Advisory Service in December 1952, it was noted that "[as] a gesture of goodwill, [the] management voluntarily awarded the pilots a bonus of five per cent before taxes for the 1952 fiscal year". It certainly appeared that Baker had softened, but he still kept his company under tight control. Every expenditure of \$500 or more had to be personally scrutinised by the boss — and he still yelled at his managers.

In February 1954 National took the decision to undertake an experiment with a helicopter service, and, using a seven-passenger Sikorsky S-55, inaugurated a scheduled helicopter passenger service over a route stretching down

*By the end of the 1950s National's domestic route network extended as far north as Boston, where Convair 340 N8413H (c/n 115) is seen here awaiting its next flight. The CV-340 entered National service in 1953 as part of the company's ongoing modernisation programme, and most had been withdrawn from service and sold by the beginning of the 1960s.*

IRA WARD VIA GEORGE HAMLIN

the coast of southern Florida from Palm Beach International Airport to Miami International Airport via seven intermediate points, including Delray Beach, Boca Raton, and Bal Harbour. The service lasted only a year.

Keeping pace with his competitors, especially Rickenbacker's Eastern, Baker regularly added modern equipment to National's fleet throughout the 1950s, including DC-6Bs, DC-7s and Convair 340s and 440s. In late 1957 he put the newest Douglas and Lockheed propliner models into service — the DC-7B and the L-1049H "Super-H" Constellation respectively.

### THE JET AGE

In October 1958 Pan American became the first operator of the Boeing 707 turbojet, while BOAC introduced the de Havilland Comet 4 on transatlantic services. The commercial jet had come of age. Pan American was strictly an international carrier and the 707 was not scheduled to be introduced domestically in the USA until early 1959, when American Airlines would place them in service between New York and Los Angeles.

Baker secretly worked out a deal with Juan

Trippe of Pan American. Since winter was the latter's low season on the North Atlantic and, conversely, National's busiest time of year with sun-seekers heading to Florida, Trippe agreed to lease two of his new 707s to Baker for National's use on the New York—Miami run, starting on December 10, 1958. Once the ink was dry on the contract, Baker publicised his coup over Rickenbacker by issuing "America's First Jet Service Timetable". The publication proudly advertised the 707 schedules commencing in December, and National could legitimately lay claim to having inaugurated the USA's first domestic jet service.

Baker had built National from a Florida "palmetto hopper" into a major international carrier. By 1961 his airline was operating its own jets, Douglas DC-8s, over a network extending west to California as a result of National's selection by the CAB to fly the southern transcontinental route. Unsurprisingly Rickenbacker was livid and challenged the decision, but to no avail. The route award was tempered somewhat by the forced suspension of service to Havana after Fidel Castro rose to power in Cuba and political relations between Cuba and the USA soured.

*Lockheed L-1049H "Super H" Constellation N7132C (c/n 4829), seen here in "Super Club Coach" configuration at Idlewild in July 1959, was delivered factory-fresh to National in September 1957 and served with the airline until 1963. As a 1957 brochure stated: "National flies the world's most modern airliners — radar-equipped of course!"*

MEL LAWRENCE VIA GEORGE HAMLIN







GEOFFREY THOMAS COLLECTION VIA JON PROCTOR

Despite the upturn in National's fortunes, Baker's health was deteriorating; he had already suffered a couple of heart attacks, and perhaps he knew that it was time to retire. He would play one more game of corporate poker on his way out.

Lewis B. "Bud" Maytag Jr was the heir to a washing-machine manufacturing fortune, but his first love was aviation. In 1958 he purchased a controlling interest in Denver-based Frontier Airlines, a local service carrier. [For the full story of the locals see the author's two-part series in TAH3 and TAH4 and his definitive book; America's Local Service Airlines (AAHS, 2016) — Ed.] Frontier's operation, serving dozens of small cities in the Rocky Mountain states and dependent on government subsidy to do so, was not to Maytag's liking, so he contacted Baker to see if he was interested in selling his stake in National. Initially Baker claimed that the company was not for sale. But he also let it be known that, for the right price, anything is for sale.

Negotiations between Maytag and Baker proceeded amicably and the former thought that he would finally have the airline that he wanted, flying big jets to big cities and making a nice profit. Everything was going well until Maytag picked up *The Denver Post* one morning to read a headline stating that National Airlines and Continental Air Lines were negotiating a merger agreement. Maytag was somewhat miffed to say the least. Behind his back, Baker had approached Continental's president, Bob Six, to see if he would be interested in pursuing a Continental purchase of National. He was.

Buccaneer Baker was playing one side against the other and, in the process, managed to increase the value of his National shares, thus forcing a better offer from Maytag. A new price of \$6.4m was agreed upon for Baker's 250,000 shares and in 1962 he finally sold up and bid a fond fare-



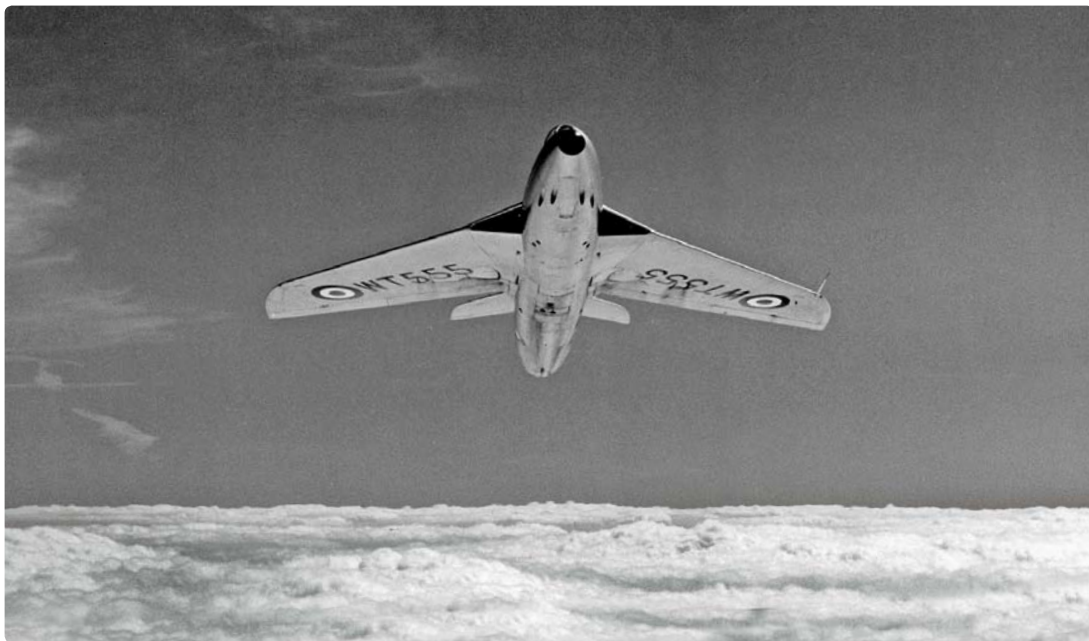
**TOP** The first of National's Douglas DC-8s, N6571C (c/n 45391) in a 1960 promotional shot showing off the company's elegant new jet-era colour scheme.

**ABOVE** A selection of National's timetables circa 1958–59, highlighting the company's use of the most modern hardware. AUTHOR'S COLLECTION

well to the airline that he had built from scratch.

Ted Baker died of a heart attack in 1963 while on vacation with his wife in Vienna. The old pirate sailed west having left behind a storied legacy in American commercial aviation. National Airlines continued to prosper under the aegis of Bud Maytag, who oversaw the addition of transatlantic routes in the 1970s. In 1980, after 46 years of successful, if sometimes turbulent, operations, National was absorbed by its new owner, Pan Am.

**ACKNOWLEDGMENTS** The author would like to thank George Hamlin and George E. Hopkins, and the Editor thanks Peter J. Marson and Jon Proctor, for their invaluable assistance with the preparation of this article



# THE SHOT OF A LIFETIME

In 1953 two of Britain's finest air-to-air photographers were selected to take some suitably dramatic photographs of the RAF's newest jet fighter, the sleek Hawker Hunter. There was certainly no shortage of drama when the final shot nearly cost one of them his life . . .

ON MAY 16, 1953, the first production Hawker Hunter F.1, WT555, made its maiden flight from the Hawker factory at Dunsfold in Surrey, in the hands of chief production test pilot Frank Murphy. Keen to illustrate the new fighter's supremely shapely lines and cutting-edge performance, the company swiftly arranged a photographic mission with the help of two of the finest aerial cameramen of the period and an Avro Lancaster.

With the Hunter and the ageing bomber having established contact over the Surrey / Hampshire countryside, photographers Cyril Peckham, formerly Hawker's official lensman but by this time a freelancer, and Leslie Hammond of the Ministry of Supply, set about capturing images of the RAF's newest fighter through the Lancaster's open side door. With side-views complete, the action shifted to the Lanc's rear turret, from which the guns had

been removed, leaving a fair-sized aperture through which to shoot some dynamic head-on shots, as seen **ABOVE**. Peckham saw the Hunter approach from astern and, with his hands and camera completely outside the airframe, started snapping. The Hunter began a slow roll, and, inverted, passed beneath the Lanc. Wanting that elusive "*moment critique*" shot, he leaned out further to catch the Hunter whistling past below.

With the Lanc's side door off and a gaping hole at the rear, a strong gust swept through the fuselage, lifting Peckham off his feet and forcing him through the aperture. With his hands and shoulders flailing in empty space, there was little he could do to prevent his seemingly inevitable departure. With commendable presence of mind, Hammond, who saw Peckham's feet leave the floor, grabbed the latter's legs and pulled him back to safety, no doubt earning himself a stiff drink — or two — from his grateful colleague once back on *terra firma*! **NS**







*First production Hunter F.1 WT555 rolls beneath the Lancaster camera aircraft during what was very nearly photographer Cyril Peckham's final shoot. Note the lack of the airbrake later fitted to the rear fuselage of production examples, and that the shell-case and ammunition link chutes are flush with the Hunter's skin. The aircraft was retired from flying at the end of 1953, but still survives and is periodically put on display at the premises of Vanguard Storage in Greenford, West London.*



# The real CATCH-22

## The wartime career of Joseph Heller

In 1961, 38-year-old American writer Joseph Heller published his first novel, *Catch-22*, an absurdist anti-war tragi-comedy swiftly hailed as a masterpiece. Heller knew whereof he spoke, having completed 60 combat missions as a bombardier in Italy during World War Two. PAVEL TÜRK chronicles Heller's wartime service



**B**ORN ON MAY 1, 1923, in Coney Island, New York, Joseph Heller was the son of Jewish immigrants from Russia, and showed a keen interest in writing from an early age. After graduating in 1941 from Abraham Lincoln High School in Brooklyn, Heller spent a year working at various jobs before enlisting with the USAAF in 1942 with a couple of friends. Initially training as an armourer, Heller graduated from cadet school as a bombardier, and was posted to a North American B-25 Mitchell medium-bomber squadron in the Mediterranean theatre of operations (MTO) in 1944.

Second Lieutenant Heller arrived in the MTO aboard a B-25 copiloted by 2nd Lt Earl C. Moon — of whom more later — via South Carolina, Algiers and Corsica, and was assigned to the 488th Bombardment Squadron (BS), 340th Bombardment Group (Medium), on May 21, 1944. Formed on August 10, 1942, the 340th was activated at Columbia, South Carolina, ten days later. Arriving in the MTO in March 1943, the 340th BG was initially absorbed into the US Ninth Air Force, transferring to the Twelfth Air Force in August 1943. The 340th BG comprised four units; the 486th, 487th, 488th and 489th BSs. From April 1944 — the 488th arrived on the 18th — until the beginning of April 1945, all four squadrons were based at Alesani on Corsica.

Completed in early 1944, Alesani incorporated a single 5,475ft (1,670m) north—south runway constructed mainly from compacted earth. From the light slope on which their tents were situated, the unit's personnel had a commanding view of the island of Elba, halfway between Corsica's eastern coast and the Italian mainland. About ten miles south-west of Elba lies the smaller island of Pianosa, where Heller would later set most of the plot of his 1961 novel *Catch-22*, based in large part on his wartime experiences.

Heller's arrival at Alesani coincided with the 488th's re-equipping with the B-25J, which was used by the unit for the first time operationally on April 14, 1944. The 488th's older B-25Ds had gradually been replaced by the new J model, and, by the time Heller had arrived on Corsica, the unit was fully equipped with the latter.

## RAISING THE NUMBERS

One of the main storylines in *Catch-22* concerns the number of missions aircrew had to complete before being eligible for rotation back to the USA. To understand this issue fully we need to go back to the beginning of the USAAF's involvement in the European theatre of operations (ETO). Initially, USAAF operations were flown by four-engined



**ABOVE** Joseph Heller some time after the publication of *Catch-22* in October 1961. The novel is set on the island of Pianosa, not far from Heller's wartime base on Corsica, and relates the experiences of a B-25 bombardier and his colleagues serving with the fictional 256th Bombardment Squadron in the Mediterranean theatre of operations during 1942–44.

Boeing B-17s and Consolidated B-24s from 1942. Daylight raids over occupied Europe without fighter escort resulted in heavy losses of ten per cent per mission and higher. Accordingly, the average life expectancy of a bomber crewmember was about 15 missions, with the limit initially being set at 25 operational flights.

When USAAF medium bombers began arriving in numbers in North Africa, however, it became obvious that the situation had changed. Standard missions were not as long as those undertaken by the "heavies" and there was less opposition from both fighters and flak, significantly reducing the risk element for the medium-bomber crews. Accordingly, when Heller arrived on Corsica, the standard number of missions to be completed by Twelfth Air Force medium-bomber crews was 50. The Allied situation continued to improve steadily, prompting the commander of the 57th Bombardment Wing (BW), Gen Robert D. Knapp — the inspiration for the novel's Gen Dreedle — to issue an order on June 22, 1944, to raise the standard number of missions to 70.

According to several combat veterans, the number of missions was raised a few times, in smaller increments. Heller recalled that the figure was initially raised to 55 and again to 60. Other

**OPPOSITE PAGE, TOP** North American B-25J Mitchells "8B" and "8P" of the 488th Bombardment Squadron, 340th Bombardment Group (Medium) on their way to a target in the Brenner Pass in late 1944. Heller flew one mission in "8B" (his 44th on September 3, 1944) and two (his 26th and 39th) in "8P" in July and August 1944 respectively.

*Mitchells of the 488th BS at one of the Foggia complex of airfields in southern Italy in 1944. The unit had played a part in the liberation of the French island of Corsica from Italian and German occupation in late 1943, and moved to Alesani airfield on the island in the spring of 1944.*

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veterans confirm the figure 65. The principal reason for the increase in the number of missions was a lack of new recruits arriving in theatre during this period, which began to change from the end of 1944. So from the point of view of the novel's protagonist, Capt John Yossarian, the villainous individual responsible for raising the number of missions was Col Cathcart, the CO of Yossarian's BG, inspired by the 340<sup>th</sup> BG's CO, Col Willis F. Chapman.

The novel unsurprisingly contains numerous caricatures of his erstwhile squadron-mates. Yossarian appears to be a portmanteau of Heller himself and another bombardier, Flight Officer Francis Yohannan, who was assigned to the 488th BS on the same day. The template for the Orr character was 1st Lt Edmund J. Ritter Jr, who arrived to serve as a copilot with the squadron on July 16, 1944. Ritter shared a tent with Heller at Alesani and grabbed the empty bed of bombardier 2nd Lt R.H. Pinkard, who was shot down on July 3, 1944. Resourceful and inventive, it was Ritter who in reality manufactured the famous intricate stove heater which turned the fictional Yossarian's tent into a luxurious apartment.

Orr's fictional escape to Sweden in a dinghy after ditching in the Mediterranean was inspired by the exploits of navigator Paul R. Gale, one of the few navigators serving with the Twelfth AF who was skilled in celestial navigation (in short supply at that time). Gale had already flown 14 missions before being posted to the 489th BS. The CO of the latter, Maj Kaufman, refused to accredit Gale with the missions already accrued, demanding that he start accumulating his 50-mission tally from scratch (43 of Gale's missions were completed as lead bombardier), before raising the requisite number of missions to 55.

The following morning Gale inflated a dinghy in front of the Officers' Mess, climbed into it and began to paddle. When Kaufman asked Gale what he was doing, Gale responded in no uncertain terms that Kaufman knew exactly what he could do with his orders and that he was going home.

Another significant character in the novel is Hungry Joe, based on 2nd Lt Joseph G. Chrenko, who joined the 488th on April 19, 1944. On May 24, 1944, Heller flew on his first mission with this tall, slim pilot, on a raid on a railway bridge at Poggibonsi in Tuscany. The novel's Doc Daneeka was based on the 488th's doctor, Capt Benjamin J. Marino, and Chaplain Tappman was inspired by the unit's own chaplain, James H. Cooper. The Indian ancestors of bombardier Capt Vincent Myer (Group Bombing Officer) provided the blueprint for the character of Chief White Halfoat, and the novel's Mess Officer and procurement specialist 1st Lt Milo Minderbinder was inspired by the marketing and sales skills of two more of Heller's squadron-mates; pilot and Mess Officer 2nd Lt Benjamin L. Kanowsky and copilot 2nd Lt Mauno A. Lindholm, who was appointed Mess Officer in August 1944. The following month Lindholm was caught by a British secret agent in Catania, Sicily, exchanging coffee for fresh eggs on the black market.

## INTO ACTION

Bombardier Heller flew his first combat mission on May 24, 1944, in B-25J tailcode "8A", which departed Alesani as part of a formation of 13 Mitchells at 0919hr. The bombers reached their target, a bridge at Poggibonsi, at 1028hr and the last of the formation landed back at base at 1115hr. One of the bombers was from the 486th BS but the remainder were from the 488th.





**LEFT** With smoke rising from the target below, B-25J serial 43-27702, "8L", turns for home following a raid on the railway marshalling yards at Fano, Italy, on June 10, 1944. Heller flew aboard Mitchell "8V" during the same raid, but flew in "8L" on three of his missions during May-June 1944. The aircraft was lost on a raid on Ferrara on July 3, 1944.

**BELOW** Christmas at Alesani in 1944. From left to right: Heller's tent-mate 2nd Lt Bob Vertrees; Hy Tribble; 1st Lt Ed Ritter (Heller's inspiration for the character Orr in *Catch-22*); Emmitt "Bill" Hughes and 1st Lt Joseph Heller. Note Ritter's fireplace/stove in the background.

Of the 104 x 500lb bombs dropped by the B-25s only a few hit the railway track on the south-western forebridge, despite the lack of any opposition from flak or fighters. Although Heller was trained in the use of the Norden bombsight, according to his own recollections, he never flew as lead bombardier on any of his missions. At this stage of the war the majority of aircraft on a bombing mission were not fitted with the Norden, only two aircraft on each mission being so equipped; the remainder took their aiming points from the lead bomber. When the bomb-bay doors of the lead bomber opened and the bombs began to drop, the remaining bombers followed suit. In place of the Norden bombsight in these aircraft a 0.50in machine-gun was fitted. Heller later stated that he had never used this gun in combat, other than when testing it.

Few of the missions in which Heller participated

were undertaken without fighter escort. Initially, the Mitchells of the 340th BG were accompanied by Supermarine Spitfires, but from mid-June 1944 Republic P-47 Thunderbolts took over escort duties. Most of the missions in which Heller took part were flown at 7,500–13,000ft (2,300–4,000m), with the majority at around 10,000ft (3,000m).

Heller flew his second mission on the same day, later in the afternoon. Owing to heavy cloud cover over the target, however, the formation was forced to bring its full bombload back to Alesani. Heller's pilot on this mission was 2nd Lt H.C. McElroy, who would become Heller's most frequent pilot, the pair flying a total of 11 missions together. The aborted mission was rescheduled for the evening of the following day, this time with success. The target bridge was hit, as was the railway track and the road.

Heller's next four missions, on transport infra-





**ABOVE** Photographed from a sister 488th BS Mitchell, B-25 serial 43-27504, "8K", departs the target area during a raid. The aircraft are in natural-metal finish, suggesting the photograph was taken during the spring or summer of 1944, before Olive Drab topsides were added. Heller flew one mission in "8K", his 47th, on September 13, 1944.

structure targets in Italy, were comparatively quiet, with no flak or enemy fighters. As an aside, on Heller's fourth mission, on a Tivoli road crossing, his B-25 was piloted by "Hungry Joe" Chrenko and on his sixth mission — the railway bridge at Piettasanto — by Benjamin Kanowsky, one of the models for Milo Minderbinder.

Heller's next three missions, on May 29, 30 and June 1, saw him reunited with McElroy. Provided with a Spitfire escort, the bomber formation's chief opposition was flak, although the enemy's aim was poor. As a result the target bridges were substantially damaged on all three raids.

On June 2 the 488th BS despatched 18 Mitchells on a raid on the railway bridge north of Foligno. Such a high number of aircraft was unusual, 6–12 being the standard complement for a single raid. It was Heller's 11th mission and McElroy was once again at the controls. Although the first "box" of six B-25s (including Heller's) scored no hits, the following two boxes completed the raid successfully. Up to seven enemy single-engined fighters were seen a few miles away by the bombers, and the official raid report states that the enemy fighters may have been up from an airfield east of Lake Trasimeno.

### A WARMER RECEPTION

For Heller's next ten missions — his 12th to 21st — there was no fighter escort and the flak was becoming increasingly accurate. After the completion of Heller's 21st mission on June 16, 1944, there is a gap of almost a month in his mission logbook, during which the unit suffered its first loss since Heller's arrival. On July 3, B-25

serial 43-27702, "8L", piloted by 2nd Lt J.E. Cooper, failed to return from a raid on fuel storage tanks north of Ferrara. German anti-aircraft gunners had created a small but intense barrage over the target; up to five parachutes were sighted, although there were seven crew aboard the B-25, including Capt Crossman, a British Allied Liaison Officer assigned to the 340th BG, and bombardier 2nd Lt Pinkard, Heller's tent-mate.

Heller's first mission after his return to combat was on July 13, comprising a raid on a railway bridge in Ferrara. A total of 15 Mitchells took off at 0850hr; 48 x 1,000lb (455kg) bombs were dropped on the target and some 396 x 20lb (10kg) fragmentation bombs were dropped about two miles north of the bridge. Three single-engined enemy fighters were sighted during the raid, but the escorting P-47s kept them at bay. Posing a much greater problem for the Mitchells was flak, and two of the bombers were hit by shrapnel. It was the first of three raids on Ferrara in which Heller took part; the flak over Ferrara was always accurate and his morbid dread of these raids is captured memorably in *Catch-22*.

The following day Heller flew another mission, his 23rd, the target a railway bridge in Corbola, 30 miles (50km) south-west of Venice. There was no fighter escort this time, but the flak over the target was scattered and the Mitchells scored direct hits on the bridge. In the absence of any escort, eight Focke-Wulf Fw 190s attacked the B-25 formation during its bombing run, but the bomber force's gunners were able to keep them at arm's length. It was the most dangerous of Heller's meetings with enemy fighters in combat.





**ABOVE** A pair of B-25Js of the 488th BS survey the columns of black smoke rising from German coastal gun emplacements on the island of Ratonneau off the French coast, near Marseille. Heller flew a mission against the same gun battery in Mitchell "8H" on August 24, 1944. The nearest B-25 here is 43-27708, "8V", Battlin' Betty.

Heller undertook two missions on July 15, 1944, the first on a railway bridge in Villafranca in Lunigiana, in the north-west of Italy, and the second on a road bridge in well-defended Ferrara. During the first raid one B-25 was forced to withdraw and return to base with a full bomb-load owing to flak damage.

The second mission of the day was much worse. Heller's Mitchell, "8X", was piloted by 2nd Lt O.R. Wilson and copilot 2nd Lt Earl Moon, with whom Heller had flown across the Atlantic. A total of 12 B-25s of the 488th BS took off at 1650hr, carrying a collective total of 48 x 1,000lb bombs. The target was hit, but heavy and accurate local flak took its toll; seven of the Mitchells were holed by shrapnel and one airman was fatally wounded.

Heller completed three more missions before the end of the month, the last of these — his 28th — being another visit to Ferrara on July 30 in B-25 "8J". The raid was only partly successful, not only because of heavy and accurate flak (one B-25 was holed by shrapnel), but also because the second box of Mitchells found itself on a collision course

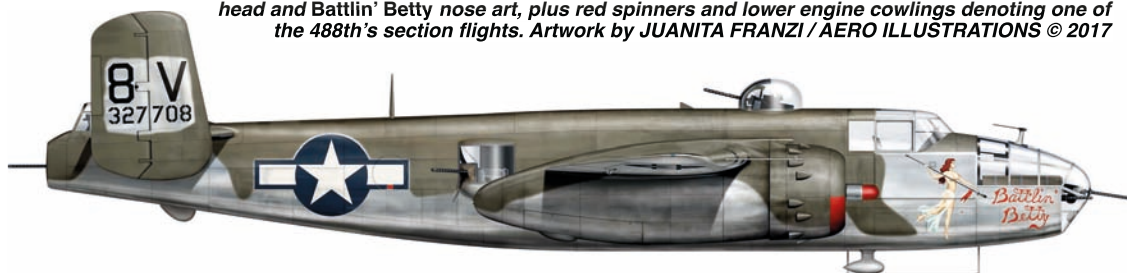
with the first and had to take evasive action, and was therefore prevented from dropping its bombs on the target.

### THE FRENCH RAIDS

Switching to various bridge targets in southern France, Heller's first two missions in August 1944, on the 3rd and the 6th, faced no opposition. This was to change dramatically on Heller's 31st mission, a raid on a railway bridge in Avignon on August 8, which would prove to be far from a "milk run".

A total of nine Mitchells took off on the raid, three carrying fragmentation bombs and aluminium strips, the latter to blind enemy radar. Just before bomb-release, one of the B-25s was hit; the bomber dropped out of the formation, and with one wing on fire, spiralled into the ground. Heller recalled seeing three parachutes. The unfortunate aircraft was serial 43-4013 "8F", piloted by 1st Lt James C. Burrhus. The copilot's seat was occupied by 2nd Lt Alvin H. Yellon, who had joined the squadron on July 29. Both

**North American B-25J-1-NC serial 43-27798/"8V" after the 488th's Mitchells had Olive Drab applied to the natural metal upper and side surfaces in mid-1944. Note the spear-carrying red-head and Battlin' Betty nose art, plus red spinners and lower engine cowlings denoting one of the 488th's section flights. Artwork by JUANITA FRANZI / AERO ILLUSTRATIONS © 2017**





**ABOVE** Bombardier Joseph Heller (at table in hat) is filmed playing the part of "Pete" for an instructional film called *Training Under Combat*, made by the 9th Combat Camera Unit at Alesani, in which Heller and his 488th BS colleagues are seen undertaking gunnery practice with water cannon and practising with the Norden bombsight.

pilots perished. Two of the other airmen aboard, S/Sgt J.F. Wheeler and Sgt R.D. Reynolds, were declared missing in action. One of the parachutes observed by Heller saved the life of bombardier 2nd Lt R.F. Hirsch, Heller's friend since training, who was rescued by the French Resistance and transported from Provence back to Allied-liberated Europe, from where he was repatriated back to the USA. As was usual practice for aircrew who had been rescued by resistance fighters, Hirsch was removed from operational flying. If he were to be captured on another mission, he ran the risk of exposing the resistance group during interrogation and possible torture.

The next three missions to France on August 11, 12 and 13 were directed against artillery batteries on the French coast. The Mitchells were escorted by Spitfires, but there was no fighter opposition or any flak on any of the three missions. On the morning of August 15 Heller flew his 35th mission, the target being the artillery batteries again. Owing to heavy cloud the B-25s were forced to take their loads back home, although it later transpired that the "artillery guns" at the latter target had been decoys. These last four raids were part of the preparations for Operation

*Dragoon*, the Allied invasion of southern France, which was launched on August 15, 1944.

Heller faced his 36th mission — the unit's fourth of the day — on August 15. At 1430hr 13 488th BS Mitchells departed Alesani for a raid on the southern railway bridge at Avignon. During the day all four squadrons of the 340th BG had attacked the three bridges in the town. The B-25s of the 488th BS carried a collective total of 48 x 1,000lb bombs and 396 x 20lb fragmentation bombs. Two B-25s aborted for technical reasons, leaving the remaining 11 to reach the target at 1627hr, at which point the B-25s were greeted by a barrage of heavy and accurate flak.

With the mission completed, on the return journey, while over the sea at around 1700hr, Mitchell 43-27713 "8D" suddenly dropped out of the formation with the port engine on fire and the starboard engine stopped, before falling into a spiralling "corkscrew" manoeuvre and smashing into the waves. Five parachutes were seen, one of which did not fully open. The pilot, Earl Moon — one of Heller's regular pilots — and all his crew perished. Also aboard was bombardier 2nd Lt F.F. Wohlstein, with whom Heller had explored the beauty of the Corsican villages in a car borrowed





**ABOVE Battlin' Betty — B-25 serial 43-27708/"8V" — delivers a devastating package of high explosives on a bridge target in Italy in 1944. Heller flew two missions aboard Battlin' Betty; his 18th, to the marshalling yards at Fano, on June 10, 1944, and his 58th, a raid on a road and railway bridge at Canneto, on October 11 the same year.**

from the squadron. It was the third and final loss during Heller's tenure with the squadron.

It was events aboard Heller's B-25 during this raid that inspired one of the most memorable scenes in the book. Immediately after bomb-release, the pilot of Heller's aircraft climbed steeply to avoid the flak. The copilot panicked and, according to Heller, became hysterical, and started to push the nose down. As Heller was tossed about in the aircraft's nose, his intercom disconnected and everything suddenly became silent. Connecting to the intercom again, Heller heard the words that would become a central leitmotif of the book and 1970 film:

"Help him! Help him!"

"Help who?"

"Help the bombardier!"

"I'm the bombardier. I'm all right."

"Then help HIM! Help HIM!"

The mid-upper turret gunner had taken a bullet to the thigh, on the inner side of which was a small entry hole, but on the outer flank a large section of flesh and muscle had been blown away. Heller accordingly treated the wounded gunner, giving him two morphine injections. This experience, combined with another involving

a mortally wounded gunner from another B-25 during a raid on Ferrara on July 15, 1944, was the basis for the creation of Snowden, the gunner in the book whose leg Yossarian carefully bandages — only to find that the young gunner's abdomen has been blown wide open.

At 0720hr on August 20, six B-25s, including "8Z", in which Heller was riding, took off on a raid on Valence airfield in France, each carrying 132 x 20lb fragmentation bombs. Thunderbolts would escort the bombers to the target, over which there was an intense but inaccurate flak screen, although two of the B-25s were holed. At the time of the raid eight Junkers Ju 88s were parked in revetments, and the bombing pattern was deemed to be good.

### A PROMOTION

Heller's next two missions — his 38th and 39th — saw a return to bombing bridges in Italy, in Parma and Settimo respectively. Little of note happened on these raids, other than three 1,000lb bombs falling through the closed bomb-bay doors of B-25 "8K" during vigorous evasive action on the Settimo mission on August 23. The fourth bomb had to be kicked out by the gunner.



**ABOVE** A pair of 488th BS B-25s, including 43-27695, "8J" (in which Heller flew five missions), and the much-photographed "8V", make their way back to Corsica following the completion of a mission over Italy. The photo is not dated, but the Olive Drab topsides and snowscape below suggest it was taken during the winter of 1944–45.

The following day, August 24, saw the 488th sent out on two missions. The target of the first was La Grand-Combe viaduct, north of the French city of Alès. Six B-25s took off at 0848hr, each carrying four 1,000lb bombs. According to the 488th BS War Diary, all six returned at 1250hr with their bombloads, owing to a heavy overcast over the target. Heller was scheduled for the second mission of the day, the target for which were the artillery batteries on Ratonneau, one of the islands in the Frioul archipelago off the coast of Marseille. Six B-25s (including "8H" with Heller aboard) took off from Alesani at 1352hr, also each carrying four 1,000lb bombs. Two of the artillery batteries were reportedly hit and the Mitchells returned to Alesani at 1645hr.

Heller's next three raids on August 29, 31 and September 2 targeted railway bridges in Italy, and were escorted by P-47s. The chief danger on these missions was flak. Coinciding with his 42nd mission on August 31, Heller was promoted

to the rank of 1st Lt. By now more than halfway through his missions, Heller undertook his 44th mission with a raid on the roadbridge at Casale Monferrato on September 3. With no opposition waiting for the Mitchells, the bridge made an easy target and was probably hit.

The following morning a total of 18 B-25s — 16 supplied by the 488th, with the 486th and 487th providing one apiece — attacked the railway bridge at Pontevico, with Heller in B-25 "8J". The first bomber-box hit the centre section of the bridge, the second hit the northern end and the third box's bombs fell short, but the bridge was completely destroyed from one bank to the other. Exceptional results were achieved owing to the lack of flak. No fighter escort was provided for this mission.

By the middle of September 1944 the 488th's missions were focused on artillery batteries and enemy troops concentrated in the Rimini area, which was well defended by anti-aircraft artillery.





**ABOVE** Heller's most frequently assigned aircraft was 43-27703, "8W", in which he completed seven missions. A soldier in khaki gazing at a vision of a young lady was painted on the nose, as was the name Duration Plus, perhaps a comment on the ever-increasing number of missions crews were being ordered to fly. Artwork by JUANITA FRANZI / AERO ILLUSTRATIONS © 2017.

**RIGHT** An official bombing photograph from the raid on the two railway bridges at Avignon in which Heller participated in Mitchell "8U" on August 15, 1944. It was during this mission that the mid-upper turret gunner was wounded, inspiring Heller to create the tragic, pivotal character of Snowden in the novel.

During the first raid on the area on September 17 (Heller's 49th mission), five out of the six B-25s on the mission were hit by flak; during the day's second raid on the same target three of the six participating B-25s were damaged by flak. Badly shaken by the intense flak, copilot of B-25 "8K" 2nd Lt W.E. Gustafson had to be replaced by bombardier Sgt Correll to assist pilot 2nd Lt H.L. Lacey during landing. Gustafson was taken to the hospital in Ajaccio immediately after landing. Enemy fighters were observed twice during these raids; in both cases they flew far below the bomber formation and did not attack.

At this time one of the 340th BG's most dreaded targets was Bologna, which was heavily defended by intense and accurate flak, and so it was with some relief that Heller managed to avoid being scheduled for a raid on Bologna on September 16. Heller incorporated this dread of Bologna in the novel when Yossarian moves the front line on the HQ map the night before the raid.

## SINK THE TARANTO

One of the more significant targets during this period was the subject of Heller's 51st mission. On September 23, 1944, the 488th BS was tasked with leading a raid on the Italian light cruiser *Taranto*, anchored in the harbour at La Spezia. The objective was to sink the cruiser before the Germans could scuttle it and block the entry to the harbour.

The 488th despatched a total of 15 B-25s, 12 of which carried six 1,000lb semi-armour piercing (SAP) bombs, with the remainder — including Heller's aircraft, "8W" — tasked with blinding gun-laying radar with aluminium strips during the primary run over the target. Mitchells of the 489th BS would form the third box. Heller's aircraft was not scheduled to carry any bombs, so

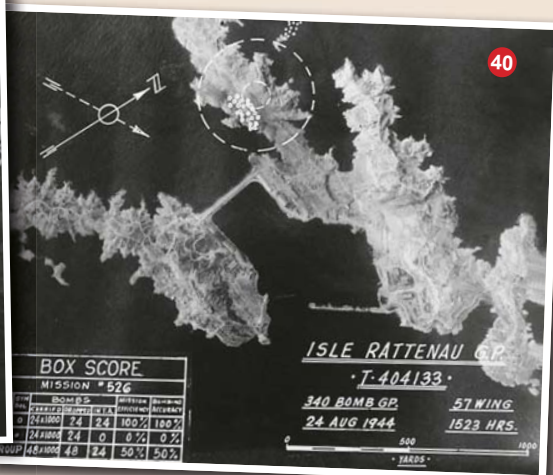


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there was actually no need for a bombardier on the mission. Nevertheless, Heller decided to add another mission to his count, but as a passenger. In the event, he shot a couple of test rounds from the nose gun and moved from his position in the glazed nose to the area ahead of the wing spar behind the pilot. Leaning his back against the pilot's armoured seat, with the armoured floor beneath him, wearing a flak helmet and vest with a second flak vest on his knees, Heller attached the parachute to his harness — he was taking no chances. The oldest and most experienced of the bomber's crew, Heller must have looked quite a picture to the relatively inexperienced crew.

The raiders' bombs were released at 11,000ft (3,350m), with the first box hitting the cruiser amidships, the second box hitting its bow and the third box of 489th BS aircraft raining bombs on the *Taranto*'s stern. The cruiser sank immediately. There was no fighter escort on this raid, and, although the flak was intense, it was largely inaccurate, only one Mitchell suffering minor damage. The only Allied casualty of the raid was

**Continued on page 104**



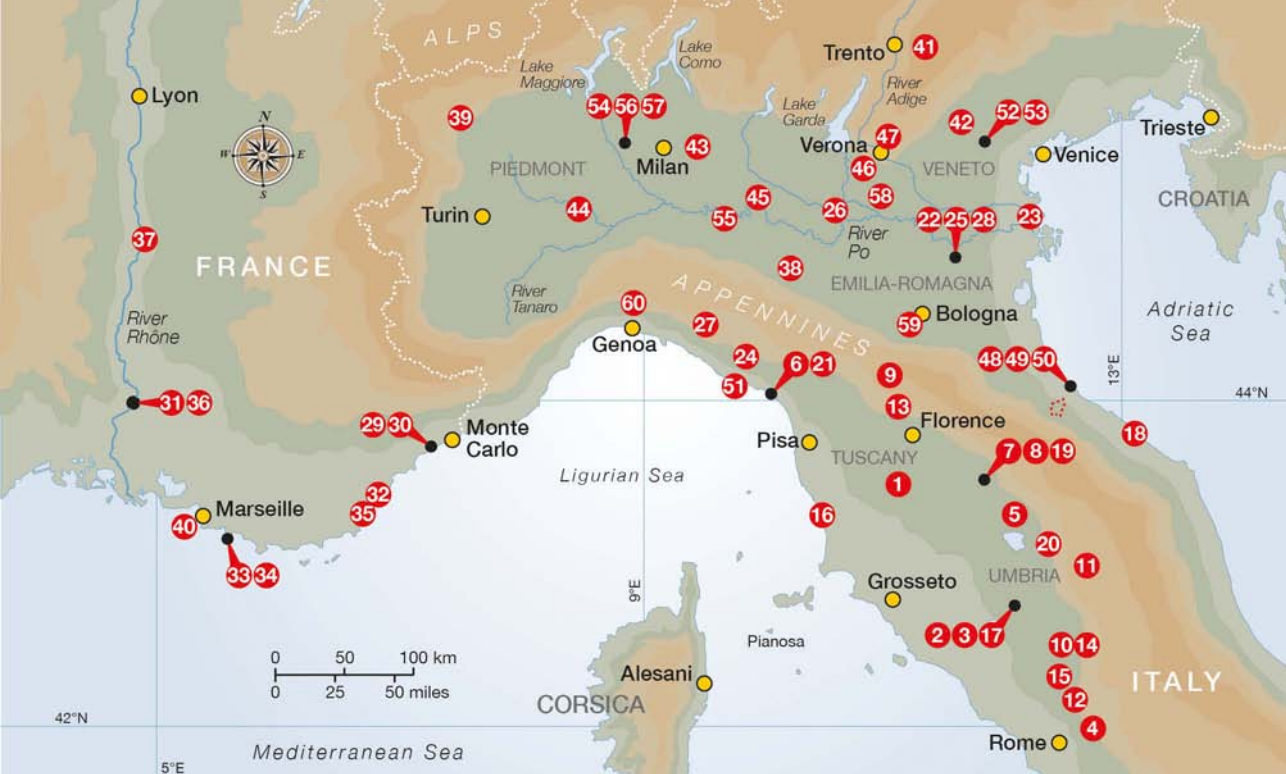
## The 60 USAAF combat missions completed by Joseph Heller, May–October 1944



THE VAST MAJORITY of the B-25s in which Joseph Heller flew during his 488th BS combat missions were B-25J variants manufactured in the first block produced by North American's Kansas City plant, i.e. B-25J-1-NCs. The only exception was serial number 43-35983, manufactured as part of Block 10, making it a B-25J-10-NC.

	Date	Tailcode	Serial No	Bombload	Target/Comments
1	24.05.44	8A	43-27532	8 x GP 500lb	<b>Poggibonsi, Italy;</b> bridge; no flak or enemy aircraft
2	24.05.44	8N	43-27522	8 x GP 500lb	<b>Orvieto, Italy;</b> road bridge; target not bombed
3	25.05.44	8N	43-27522	8 x GP 500lb	<b>Orvieto, Italy;</b> road bridge hit; no flak or e/a
4	26.05.44	8G	43-27734	8 x GP 500lb	<b>Tivoli, Italy;</b> road crossing; direct hit, no flak
5	26.05.44	8A	43-27532	8 x GP 500lb	<b>Cartone, Italy;</b> railway bridge; no flak or e/a
6	27.05.44	8A	43-27532	8 x GP 500lb	<b>Piettasanto, Italy;</b> railway bridge; direct hit, no flak
7	28.05.44	8L	43-27702	8 x GP 500lb	<b>Bucine, Italy;</b> viaduct hit; no flak or e/a
8	29.05.44	8C	43-27749	4 x GP 1,000lb	<b>Bucine, Italy;</b> viaduct hit; heavy but inaccurate flak
9	30.05.44	8U	43-4064	4 x GP 1,000lb	<b>Grizzana, Italy;</b> railway bridge hit; flak as above
10	01.06.44	8L	43-27702	8 x GP 500lb	<b>Narni, Italy;</b> road bridge; direct hit; flak as above
11	02.06.44	8C	43-27749	8 x GP 500lb	<b>Foligno, Italy;</b> road bridge; direct hit; e/a observed
12	03.06.44	8S	43-27729	8 x GP 500lb	<b>Civita Castellana, Italy;</b> road bridge hit; no flak
13	04.06.44	8C	43-27749	4 x GP 1,000lb	<b>Vernio, Italy;</b> railway bridge; no flak or e/a
14	05.06.44	8W	43-27703	4 x GP 1,000lb	<b>Narni, Italy;</b> road bridge; heavy but inaccurate flak
15	06.06.44	8Q	43-4025	8 x GP 500lb	<b>Montefiascone, Italy;</b> road; no flak or e/a
16	07.06.44	8G	43-27734	4 x GP 1,000lb	<b>Cecina, Italy;</b> road bridge; heavy accurate flak
17	09.06.44	8L	43-27702	4 x GP 1,000lb	<b>Orvieto, Italy;</b> road bridge; heavy accurate flak
18	10.06.44	8V	43-27708	8 x GP 500lb	<b>Fano, Italy;</b> marshalling yards; heavy accurate flak
19	12.06.44	8X	43-4038	8 x GP 500lb	<b>Bucine, Italy;</b> viaduct; no flak or e/a
20	13.06.44	8M	43-4055	4 x GP 1,000lb	<b>Perugia, Italy;</b> road bridge; heavy inaccurate flak
21	16.06.44	8M	43-4055	4 x GP 1,000lb	<b>Pietrasanta, Italy;</b> railway bridge; direct hit, no flak
22	13.07.44	8X	43-4038	4 x GP 1,000lb/ 132 x 20lb FB	<b>Ferrara, Italy;</b> railway bridge hit; heavy and accurate flak, 2 x B-25s holed; 3 x e/a observed
23	14.07.44	8G	43-27734	4 x GP 1,000lb	<b>Corbola, Italy;</b> railway bridge; direct hit, heavy but inaccurate flak; attacked by 8 x Fw 190s
24	15.07.44	8W	43-27703	4 x GP 1,000lb	<b>Villafranca, Italy;</b> railway bridge hit, heavy flak
25	15.07.44	8X	43-4038	4 x GP 1,000lb	<b>Ferrara (Pontelagoscuro), Italy;</b> road bridge hit; heavy accurate flak; 7 x B-25s holed; 1 x crew KIA
26	23.07.44	8P	43-27657	4 x GP 1,000lb	<b>Borgoforte, Italy;</b> railway bridge; direct hit
27	27.07.44	8M	43-4055	8 x GP 500lb	<b>Carisasca, Italy;</b> road bridge; direct hit
28	30.07.44	8J	43-27695	4 x GP 1,000lb	<b>Ferrara, Italy;</b> road bridge probably hit; heavy flak
29	03.08.44	8Q	43-4025	4 x GP 1,000lb	<b>Var River, France;</b> road bridge hit; inaccurate flak
30	06.08.44	8E	43-35983	4 x GP 1,000lb	<b>Var River, France;</b> railway bridge hit; light flak
31	08.08.44	8W	43-27703	No record	<b>Avignon, France;</b> railway bridge; B-25 s/n 43-4013 "8F" shot down
32	11.08.44	8Q	43-4025	8 x GP 500lb	<b>St Raphael, France;</b> artillery batteries; no flak
33	12.08.44	8W	43-27703	8 x GP 500lb	<b>La Ciotat, France;</b> artillery batteries hit; no flak





MAP BY MAGGIE NELSON

34	13.08.44	8C	43-27749	8 x GP 500lb	<b>La Ciotat, France</b> ; artillery batteries hit; no flak
35	15.08.44	8F	43-27770	8 x GP 500lb	<b>Issambres Point, France</b> ; artillery batteries; not bombed owing to overcast; no flak or e/a
36	15.08.44	8U	43-4064	4 x GP 1,000lb / 132 x 20lb FB	<b>Avignon, France</b> ; railway bridge hit; intense flak; B-25 s/n 43-27713 "8D" shot down; no e/a
37	20.08.44	8Z	43-27537	132 x 20lb FB	<b>Valence, France</b> ; airfield (8 x Ju 88s in revetments)
38	21.08.44	8J	43-27695	4 x GP 1,000lb	<b>Parma, Italy</b> ; western railway bridge hit; no flak
39	23.08.44	8P	43-27657	4 x GP 1,000lb	<b>Settimo, Italy</b> ; road bridge; heavy inaccurate flak
40	24.08.44	8H	43-27551	4 x GP 1,000lb	<b>Ratonneau, France</b> ; artillery batteries probably hit
41	29.08.44	8Q	43-4025	4 x GP 1,000lb	<b>Busche, Italy</b> ; railway bridge; no flak or e/a
42	31.08.44	8J	43-27695	4 x GP 1,000lb	<b>Cittadella, Italy</b> ; railway bridge hit; intense flak
43	02.09.44	8F	43-27770	4 x GP 1,000lb	<b>Cassano D'Adda, Italy</b> ; railway bridge; direct hit
44	03.09.44	8B	43-3990	4 x GP 1,000lb	<b>Casale Monferrato, Italy</b> ; road bridge probably hit
45	04.09.44	8J	43-27695	4 x GP 1,000lb	<b>Pontevico, Italy</b> ; railway bridge destroyed
46	05.09.44	8U	43-4064	4 x GP 1,000lb	<b>Palazzolo, Italy</b> ; railway bridge hit; no flak or e/a
47	13.09.44	8K	43-27504	4 x GP 1,000lb	<b>Peschiera, Italy</b> ; railway bridge; direct hit
48	14.09.44	8U	43-4064	132 x 20lb FB	<b>Rimini, Italy</b> ; fuel/ammunition stores, troops; heavy but inaccurate flak; 1 x Fw 190 observed
49	17.09.44	8J	43-27695	8 x GP 500lb	<b>Rimini, Italy</b> ; artillery batteries & troops; heavy flak
50	18.09.44	8M	43-4055	100lb DB + 20lb FB	<b>Rimini, Italy</b> ; artillery batteries, troops; light flak; 3 x Bf 109 observed below formation
51	23.09.44	8W	43-27703	6 x SAP 1,000lb	<b>La Spezia, Italy</b> ; <i>Taranto</i> sunk; heavy flak
52	24.09.44	8C	43-27749	4 x GP 1,000lb	<b>Piazzola, Italy</b> ; railway bridge; not bombed owing to overcast; no flak or e/a
53	26.09.44	8M	43-4055	4 x GP 1,000lb	<b>Piazzola, Italy</b> ; railway bridge; no flak or e/a
54	30.09.44	8W	43-27703	4 x GP 1,000lb	<b>Trecata/Magenta, Italy</b> ; railway bridge; intense flak
55	01.10.44	8W	43-27703	8 x GP 500lb	<b>Piacenza, Italy</b> ; railway bridge hit; intense flak;
56	03.10.44	8F	43-27770	4 x GP 1,000lb	<b>Magenta, Italy</b> ; road/railway bridge; intense flak
57	04.10.44	8U	43-4064	4 x GP 1,000lb/ 4 x SAP 1,000lb	<b>Magenta, Italy</b> ; road/railway bridge; mission recalled after 30min owing to overcast
58	11.10.44	8V	43-27708	4 x GP 1,000lb	<b>Canneto, Italy</b> ; road/railway bridge; no flak or e/a
59	12.10.44	8C	43-27749	8 x GP 500lb	<b>Casaleacchio, Italy</b> ; stores, troops; heavy flak
60	15.10.44	8Q	43-4025	4 x GP 1,000lb	<b>Ronco Scrivia, Italy</b> ; railway bridge hit; no flak

#### Bombs

GP — General Purpose FB — Fragmentation bombs DB — Demolition bombs SAP — Semi-Armour Piercing



**ABOVE** Bearing an apt piece of nose art in the shape of Swiss folk hero William Tell, B-25J serial 43-27551, "8H", is seen with the Alps in the background during a raid on a bridge at Ora (Auer) in northern Italy. Heller flew only one mission in "8H", his 40th, on August 24, 1944. It later crashed after take-off from Alesani on March 16, 1945.

#### Continued from page 101

tailgunner S/Sgt Zoolalian in Mitchell "8Z", who broke his thumb releasing the aluminium strips.

The remainder of Heller's missions were mainly uneventful, with no interference from enemy fighters and generally light flak, although heavy flak was encountered during a raid on bridges at Magenta on October 3 — Heller's 56th mission — during which eight Mitchells were damaged. On the same day it was noted in the 488th's War Diary that 44 crewmembers had reached the 60-mission limit, but that there were no fresh crews available to take their places.


Heller's final six missions were piloted by 1st Lt M.G. Duncan, with whom Heller flew a total of eight missions. On Heller's 60th and final mission, on October 15, 1944, to Ronco Scrivia, the copilot was his tent-mate 2nd Lt R.R. Vertrees. Although Vertrees had joined the squadron just one day after Heller, the two tent-mates flew only three missions together; the first on May 28, the second on July 30 and the last as mentioned above.

### HOMeward BOUND

Although Heller stopped operational flying in mid-October 1944, it took some time to arrange his passage back home. The 488th's War Diary states that on the afternoon of December 3, 1944, an order was received to rotate ten officers and 16 enlisted men back to the USA. Heller was probably one of these, but we know from a

photograph of him in a tent at Alesani that he spent the Christmas of 1944 on Corsica.

In the new year the SS *Argentina* left Naples bound for Boston, probably with Heller aboard. After ten days at sea the steamship dropped anchor in Boston Harbour. On his return, Heller was awarded the Air Medal and received a Presidential Unit Citation for his service. With characteristic modesty, Heller later remarked that the medal was awarded automatically to all airmen who had reached the mission limit, and not for outstanding bravery or results. So, perhaps disappointingly, it would appear that the memorable scene in which a naked Yossarian accepts a medal from Gen Dreedle has no basis in Heller's experiences on Corsica.

For Joseph Heller the war was over. Thanks to his contribution to the defeat of the Axis Powers he was given the opportunity to go to university on the GI Bill, something he could only have dreamed of before the war. Accordingly, Heller graduated with a Master of Arts degree in English Language from Columbia University in New York in 1949, before being selected for a Fulbright Scholarship to attend Oxford University in the UK. After a period spent teaching at Pennsylvania and Yale Universities in the USA, Heller took a job as a copywriter for a small advertising agency, and in 1953 started to write the novel based on his war experiences that would become his masterpiece, *Catch-22*. 



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# HILLSON'S HORRIBLE HELVELLYN

Best known for its production of the Czechoslovakian Praga E.114 touring aircraft, F. Hills & Sons — known as Hillson — also produced two (by all accounts dreadful) machines of its own design. Using recently rediscovered contemporary flying reports, **PHILIP JARRETT** takes a look at the little-lamented Helvellyn, the company's second and final design



**A**S FAR AS aeroplanes are concerned, F. Hills & Sons Ltd, the Trafford Park, Manchester-based provider of building materials and plywood, is probably best known for the Hillson Praga, a licence-built version of the Czechoslovakian Praga E.114 light monoplane. Production of the British Praga was begun in 1936 and 25 were completed, but the company subsequently produced two obscure one-off monoplanes designed in-house by Norman Sykes. The first was the sole Hillson Pennine, an unattractive, woefully underpowered high-wing monoplane that flew briefly in 1938. The second, built through late 1938 to early 1940, was the Helvellyn, a tandem two-seat mid-wing cantilever monoplane named after a mountain in England's Lake District.

Intended to serve as a basic trainer, the Helvellyn was powered by a 90 h.p. Blackburn Cirrus Minor I four-cylinder inverted air-cooled engine. Apart from the rather ungainly metal engine cowling, the airframe was wooden and was probably predominantly skinned with plywood like the company's previous machines, apart from the fin and rudder, which appear to have been fabric-covered. A long moulded turtledeck fairing above the upper fuselage longerons faired the cockpit apertures into the fuselage lines. An unusual feature was the provision of two square transparencies on each side of the fuselage below each cockpit, allowing the pilot and passenger/trainee downward views off to port and starboard, although how much they might have been able to see is questionable. The rear fuselage carried a high-set tailplane with inset elevators, and a large triangular fin and rudder. Immediately aft of the wing trailing edge on the port side a foot-hole was provided to facilitate entry into the open cockpits by walking along the wing root.

The mid-set 33ft (10m)-span wing comprised a fixed 9ft 8in (2.9m)-span centre section integral with the fuselage and two outer panels. The centre-section housed a pair of 12gal fuel tanks and incorporated split trailing-edge flaps. Inset trapezoidal ailerons were positioned just inboard of the curved wingtips.

The fixed reverse-tricycle undercarriage consisted of two internally sprung Praga magnesium mainwheels with steeply raked, faired legs, attached to the roots of the main spar and with additional struts to the fuselage centre and rear drag struts, and a simple steerable tailwheel. It was claimed that a float undercarriage could be fitted if required.

Dismantling the Helvellyn was reported to be easy, as it was not necessary to disconnect the aileron control circuit. An assembly joint behind the rear cockpit and an easily detachable tail enabled the aircraft to be packed into a reasonably small crate.

#### HIGH HOPES

The sole example, c/n H.A.200, was registered G-AFKT on November 7, 1938, and received its Authorisation to Fly on April 30, 1940. The date of its maiden flight does not appear to have been recorded. If the Helvellyn had been intended for the civil aviation market, the outbreak of war effectively scotched that option, but it was evidently hoped that it might find a place as an *ab initio* military trainer, as in July 1940 it went to the Royal Aircraft Establishment (RAE) at Farnborough to undergo handling trials, apparently to confirm that it could not be made to spin.

At 1700hr on July 22 Sqn Ldr Hugh Wilson of the RAE's Aerodynamic Flight took off in the Helvellyn and flew it for 25min. He was not impressed, as his report reveals:

"It would appear that this aircraft has only

**OPPOSITE PAGE, TOP** The only known photograph of the unlovely Hillson Helvellyn. **BELOW** The plywood-covered Hillson Praga was powered by either a 36 h.p. Praga B or a 40 h.p. Aeronca JAP, and seated two side-by-side in an enclosed cockpit. Praga G-AEON is seen here at the A&AE at Martlesham Heath in 1936.



done about 30 minutes flying prior to being sent here for trials, and that the pilot concerned does not appear to have had much, if any, testing experience.

"In view of this it is not surprising that the aircraft wants a lot of cleaning up, and whether this should be done at the RAE is open to question.

"The Hillson is officially here to check a report that it is unspinnable. Before attempting these tests it is necessary to cure its teething troubles.

"The following observations were made on flying the aircraft:

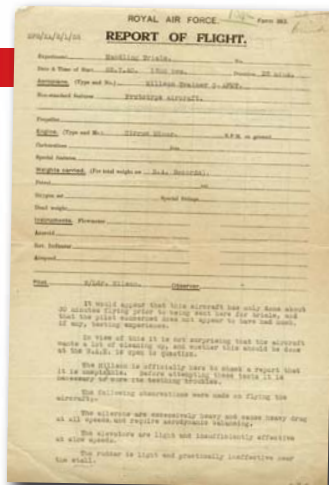
- the ailerons are excessively heavy and cause heavy drag at all speeds, and require aerodynamic balancing;
- the elevators are light and insufficiently effective at slow speeds;
- the rudder is light and practically ineffective near the stall;
- when the flaps are down the rudder and elevators can be actuated right through their total movement with practically no response;
- the handbrake does not work at all, but the rudder differential braking is satisfactory;
- the throttle lever requires an adjustment screw so that it can be tightened by the pilot;
- the aircraft lacks any form of fore and aft trimming, which is necessary in a two-seater;
- the upward movement of the elevators is insufficient to allow the aircraft to be completely stalled, and therefore probably prevents the aircraft spinning;
- spinning the aircraft should not be attempted until more rudder control at low speeds is available."

In an effort to remedy some of the Helvellyn's shortcomings, a number of modifications were made, including increasing the rudder travel and altering the brake setting. The aircraft then underwent a second handling test, being flown this time by Sqn Ldr Hayter of the Engine Research Flight. Two days after Wilson's flight, at 1130hr, Hayter flew the Helvellyn for 30min. He reported as follows:

"Cockpit: seat very uncomfortable chiefly owing to lack of support for lower part of back. Heels tend to get caught behind rudder pedals. Rudder and elevator controls very stiff to move on ground.

"Take-off: the take-off is simple if not very short and initial climb fair for power. Left rudder is necessary during take off and climb.

"In the air the aileron control is effective, but very heavy and somewhat sluggish. There is



considerable drag. The elevator is slow to respond and light. The rudder is moderate in weight and effective.

"Stalling without flaps: the stick can be held right back and there is little tendency to pitch or drop a wing. The IAS [indicated airspeed] is round about 54 m.p.h. [87km/h].

"With flaps: the tendency to pitch and yaw is greater, but can be controlled. The aircraft sinks at an IAS of about 40 m.p.h.

[64km/h] with the stick right back.

"The compass swings or revolves all the time.

"Even with flaps down the glide is flat; but the aircraft is manoeuvrable and easy to land. Without brakes the run is long."

## MISBEGOTTEN, BEST FORGOTTEN

This rather more favourable report ended the RAE's involvement with the Helvellyn. Both reports were sent to Hills by Mr Birch on behalf of the Chief Superintendent of the RAE on August 22, 1940. Little is known of the aircraft's subsequent career, other than that it was used as a company communications machine, mainly between Barton and Ipswich.

The Helvellyn was dismantled in November 1942 and probably scrapped. As a civil aircraft it could not have hoped to compete with the leading two-seaters then current, and it would have needed a lot of work to make it a useful military basic trainer when there were already other types adequate for the task, such as the Tiger Moth and Miles Magister.



## HILLSON HELVELLYN DATA

**Powerplant** 1 x 90 h.p. Blackburn Cirrus Minor I four-cylinder inverted air-cooled in-line engine driving a two-bladed fixed-pitch wooden propeller

### Dimensions

Span	33ft 0in	(10m)
Length	22ft 0in	(6.7m)
Wing area	156ft <sup>2</sup>	(14.49m <sup>2</sup> )

### Weights

Empty	900lb	(406kg)
Loaded	1,500lb	(680kg)

### Performance

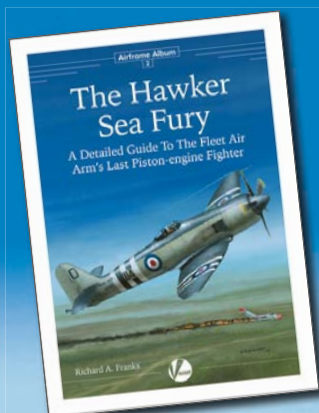
Cruising speed	110 m.p.h. (177km/h) at 2,300 r.p.m. (60 h.p.) at 1,000ft (300m) with a consumption of 4gal/hr (18lit/hr) for 6hr
Initial climb	750ft/min (3.8m/sec)
Range in still air	660 miles (1,060km)



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The John Stroud Archive

# ARCTIC ASSIGNMENT

## Propliner proliferation in Finland

In 1949 John made the first of several trips to Scandinavia with his wife, fellow aviation journalist Patricia, the pair spending a fortnight in Finland exploring the air transport achievements of national carrier Aero O/Y. They returned in 1956 to report on the progress made by the airline, then operating as Finnair, since their last visit

**O**F THE MANY points on the globe visited by British aviation journalist and author John Stroud *[no relation! — Ed.]* during his long and illustrious career, one to which he returned frequently in his earlier freelance days was Finland; an early adopter of the aeroplane and all the benefits it could bring to a nation covering 100,000 square miles (260,000km<sup>2</sup>) of lakes, dense woodland and alpine tundra reaching well into the Arctic Circle. The intrepid reporter's first visit to the land of shimmering forest pools and long shadows was in the late spring of 1949, during a six-week tour of Scandinavia with his

wife and fellow freelance aviation journalist Patricia. It was a country to which he would return in 1956, when he found himself in an excellent position to report for British weekly *Flight* on the great strides made in Finnish air transport in the seven years since his last visit.

### Start to Finnish air transport

One of the oldest airlines in the world, Finnair was formed as Aero O/Y (Aero Ltd) in late 1923 by banker Bruno Lucander, who had gained experience in the commercial air transport business with German/Estonian company Aeronaut, for which he had overseen the fledgling airline's Finnish operations.

*The Finnish Post Office bus is loaded from Finnair DC-3 OH-LCC, named Tiira, at Rovaniemi in northern Finland, on April 24, 1956. The bus, which provided airport-to-town transport, crossed the Arctic Circle on each run.*







One of Britain's most respected aviation journalists and authors, John Stroud (born April 3, 1919) joined Imperial Airways aged 14. Six years later he became a freelance aviation writer and in 1963 was appointed General Editor of the definitive Putnam series of aeronautical books. Also a talented photographer, John continued to contribute articles to the British aviation press until his death in March 2007. In 2014 a substantial part of John's archive, including numerous rolls of previously unseen 35mm film, was acquired by A Flying History Ltd and forms the basis of this regular *TAH* series





**ABOVE** *Junkers Ju 52/3m OH-LAO (WNR 7493) at Malmi in May 1949. It entered Aero O/Y service in September 1942, but was leased to Lufthansa the following month, serving as D-AEAC until July 1944. After its Aero O/Y career it was sold to Sweden and later served with Gibbes Sepik Airways in New Guinea.*

**RIGHT** *A shared interest: John and Patricia Stroud beside a Viscount at Wisley, circa 1955–56. Patricia filed numerous reports for Flight during her career.*



Established as a private venture with local capital in November 1923, Aero O/Y began operations on March 20, 1924, with a float-equipped Junkers-F 13 flight to Tallinn in Estonia, a route later extended to Riga and Königsberg (now Kaliningrad).

In June 1924 the vital trans-Baltic air route between Helsinki and Stockholm was inaugurated, incorporating a stop at Turku on Finland's south-west coast, with the co-operation of Swedish airline AB Aerotransport. As airline historian R.E.G. Davies explained in *A History of the World's Airlines* (Oxford University Press, 1964): "Nowhere in Europe at this time did the arrival of air travel result in a greater saving of time compared with other means of transport. Whether by sea — which was icebound in winter — or by road or rail around the northern end of the Baltic Sea, the journey from Stockholm to Helsinki was a long-drawn affair".

The airline operated for more than three years before suffering its first loss, on November 16, 1927, when a Junkers-F 13 disappeared en route from Tallinn to Helsinki, probably owing to the pilot's disorientation. Although the establishment of international services represented a major breakthrough for the Finns, domestic operations initially proved much harder to sustain, with virtually no airports to support such a network. It would take another decade before sufficient runways had been carved into the Finnish landscape to enable a fledgling domestic programme; in the summer of

1937 Aero O/Y opened services to Viipuri (now Vyborg) on the Karelian Isthmus and Tampere in central southern Finland using newly-acquired de Havilland Dragon Rapide OH-BLA *Salama*.

By the summer of 1939 Aero O/Y's domestic routes stretched from Helsinki to Imatra in the east via Viipuri, and to Kemi at the head of the Gulf of Bothnia via Tampere, Vaasa and Oulu. The latter route was progressively extended inland to Rovaniemi and Ivalo, eventually reaching Petsamo (now Pechenga) on the Arctic Ocean by late 1939. International operations had also seen expansion with the inauguration of flights to Berlin operated in concert with Germany's Deutsche Lufthansa.

### **War intervenes . . . twice**

With both domestic and international air services thriving, and with plans to begin exploring transatlantic services, Aero O/Y suffered





**ABOVE** One of the more unusual types encountered by John and Patricia during their 1949 visit was Viima II OH-VKJ, named Pirkka. Designed and built by the state aircraft factory, Valtion lentokonetehtäas, the type was powered by a 150 h.p. Siemens-Halske Sh14A Bramo seven-cylinder engine. In total, 24 were built, all ultimately seeing service with the Finnish military.

a substantial blow when the Soviet Union engineered the beginning of the Winter War in November 1939, the bombing of Helsinki and the prospect of fighter attacks severely curtailing the airline's operations. Indeed, some 90 per cent of the company's services had to be flown at night, often under appalling weather conditions. The fleet by this time consisted mainly of Junkers Ju 52/3m trimotors, Lucander having brokered a shrewd deal with the German aircraft manufacturer in the 1920s, in which aircraft were supplied for a share in the airline's profits.

The Winter War lasted until March 1940, after which Finland, whose forces had fought bravely and well, was nevertheless forced to cede some 11 per cent of its territory to the Soviet Union, including Petsamo in the north and large parts of the Karelian Isthmus in the south-east. As a result, Aero O/Y's northernmost destination became Ivalo, and Viipuri became part of the Karelo-Finnish Soviet Socialist Republic.

Although the conflict with the Soviets had officially ended in March, air operations remained hazardous, and on June 14, 1940, Aero O/Y Ju 52/3m OH-ALL, named *Kaleva*, was attacked over the Gulf of Finland shortly after take-off from Tallinn by a pair of Soviet twin-engined bombers (probably Ilyushin DB-3s or Tupolev SB-2s), which opened fire under orders not to allow any military aircraft to approach Finland. All nine aboard were killed when the trimotor crashed into the sea north-east of Keri Lighthouse. Significantly, the Ju 52/3m was carrying French and American diplomatic staff, and important papers were swiftly retrieved from the crash site by a Soviet submarine. Two days later the Soviets began the full-scale occupation of Estonia and Latvia.

Despite this troubling episode, Aero O/Y once again began to look to the future and entered the modern era with the acquisition in March 1941 of a pair of Douglas DC-2s, originally registered

OH-DLB (named *Sisu*) and OH-DLA (*Volma*), re-registered that May as OH-LDB and OH-LDA respectively. Within four months, however, hostilities with the Soviet Union had resumed in the form of the Continuation War, which lasted until September 1944. Some of Aero O/Y's domestic routes were maintained throughout the conflict, as were the links with Stockholm and Berlin; but, on March 3, 1945, all air transport operations in Finland were suspended for six months under conditions set by the Allied Control Commission, which classified the nation as an ally of Nazi Germany.

The following year the Finnish government acquired a 70 per cent stake in Aero O/Y and in June 1946 nine Douglas DC-3s were purchased to replace the two Ju 52/3ms and two DC-2s then comprising the fleet. Domestic services were quickly resumed, as was the Stockholm service from November 1, 1947. Routes to Copenhagen and Amsterdam were opened in 1948, with services extending to Hamburg and Düsseldorf three years later.

### Back in business

When John and Patricia Stroud paid their first visit to Finland in 1949, Aero O/Y's domestic services were thriving, operating along five main routes:

- Helsinki—Jyväskylä—Kuopio;
- Helsinki—Vaasa—Oulu—Kemi—Rovaniemi;
- Helsinki—Turku—Pori;
- Helsinki—Turku—Maarianhamina;
- Helsinki—Tampere.

All services originated at the airport at Malmi,



**ABOVE** The prototype Saab Scandia, SE-BCA, beside the circular three-floor terminal and control tower at Malmi in early June 1949. The Pratt & Whitney Twin Wasp-powered Scandia was available in 24- or 32-seat configurations and was extensively tested for operational suitability by Aero O/Y with Saab test pilot Claes Smith at the controls.



seven miles (11km) north-east of the centre of Helsinki, the airport incorporating four paved runways and a hangar, and which had been used from December 1936, although it was not officially opened until May 1938. Malmi also sported a distinctive circular terminal building designed by Dag Englund and Vera Rosendahl, although by 1949 plans were afoot to build a more modern airport at Vantaa as a Finnish design showcase for the Summer Olympics, which were to be held in Finland in 1952.

In 1949 all the domestic routes were served once in each direction on weekdays, with the exception of a twice-daily weekday service to Turku; the Kuopio route was operated only in the summer months, however, as was the Kemi—Rovaniemi sector. The DC-3s were configured to carry 21 passengers and the number of sector seats offered weekly in 1949 was in the region of 2,770.

John and Patricia made the most of their 1949 visit, taking advantage of an opportunity to fly aboard one of Aero O/Y's last remaining Ju 52/3ms, OH-LAO, named *Vaasa*, on a post-retirement 30min test flight on May 31. Three days later the pair sampled the Helsinki—Jyväskylä—Kuopio service aboard DC-3 OH-LCH, the round trip taking a total flying time of just over 2hr. The following week, the intrepid Strouds were invited to accompany a Saab team led by test pilot Claes Smith, who was undertaking operational tests on behalf of Aero O/Y with the prototype of the Swedish company's Scandia airliner, which had made its maiden flight in November 1946. On June 7, 1949, John and Patricia boarded the Scandia,





**ABOVE** Convair 340 OH-LRC awaits its next flight at Bromma, Stockholm, shortly after the type's introduction into Aero O/Y service in 1953. Note the CV-340's "aspirated cooling" system, comprising a pair of "thrust-augmenter" tubes on the rear of each engine nacelle; this would be much modified on the improved CV-440 Metropolitan.

SE-BCA, at Malmi for the 1hr 21min flight to Vaasa, where a short break was taken before the prototype set off again for Kemi. A little over an hour later the Scandia alighted on Kemi's gravel runway, before heading off for Rovaniemi shortly afterwards. The following morning a non-stop flight back to Helsinki was completed in 2hr 47min. On June 9, John and Patricia once again boarded the Scandia, taking their leave of Finland on a flight to Stockholm.

Aero O/Y chose not to purchase the Swedish airliner, and was already casting its eye towards the new generation of jet-powered airliners, *Flight* reporting in December 1949 that the Finnish government was exploring the acquisition of Canadian-built jetliners, or possibly buying a fleet of Ilyushin propliners from the Soviet Union. Ultimately, Aero O/Y chose to proceed on a more cautious programme of expansion by acquiring three American Convair 340s from April 1953 to supplement its fleet of faithful DC-3s.

That year the Düsseldorf service was extended to Paris, while the Copenhagen—Amsterdam sector was closed. The Paris route was re-routed via Hamburg and Amsterdam in 1955. A London service was inaugurated with the CV-340 in September 1954, by which time Helsinki's main airport had switched from Malmi to the new location at Vantaa, which had officially opened for traffic in July 1952. By this time, Aero O/Y had begun operating under the name Finnair.

In December 1955 a bilateral agreement was concluded between Finland and the Soviet Union, in which Finnair would become the first airline outside the Soviet Bloc to operate into the

Russian capital, a proving flight for the non-stop CV-340 Helsinki—Moscow service taking place on February 10, 1956, with scheduled flights beginning a week later. Aeroflot had been operating a Leningrad—Helsinki service for some time, but under the new agreement had to cut back capacity to 50 per cent of the available traffic. By this time, with Finnair's international network expanding rapidly, several of the company's domestic services were transferred to Karhumäki Airways (Kar-Air), which had been formed in 1947 and started operations in 1950 with a pair of Dragon Rapides. These were replaced by a Lockheed Lodestar in 1952, which was in turn replaced by a fleet of DC-3s from 1954, which plied the routes inherited from Finnair, including services between Helsinki and Joensuu, Lappeenranta and Tampere.

### **The Finns go Metropolitan**

Although the CV-340s of Finnair were a significant improvement over Aero O/Y's pre-war-vintage DC-3s, the type nevertheless had its drawbacks, the most noticeable of which from the passenger's perspective was the high level of cabin noise. As with its predecessor, the CV-240, the CV-340 incorporated a system in which the exhaust was ejected via two circular-section thrust-augmenter tubes protruding from the upper rear end of each engine nacelle, in line with the sixth row of seats from the front of the passenger cabin. Although this system improved performance, it was by all accounts hard to hold a conversation anywhere in the rear half of the aeroplane. When passenger complaints began to become louder than the offending racket,



**ABOVE** The first Finnair CV-440 Metropolitan, OH-LRD, dubbed “Finnliner”, at Helsinki-Vantaa in April 1956. Although the company had begun trading as Finnair, the company’s original name, Aero O/Y, was still carried prominently on the fins of its aircraft.

**RIGHT** The revised exhaust outlet of the CV-440’s Pratt & Whitney Double Wasp engine nacelle, in which the original twin tubes fitted to the CV-240 and 340 were enclosed in an attempt to palliate the high noise levels experienced in the cabins of the earlier models.



a perception intensified by the comparative quietness of one of the CV-340’s chief rivals — the turboprop-powered British Vickers Viscount — Convair was forced to take action. The result was the CV-440 Metropolitan, identical dimensionally to the CV-340, but with a number of modifications to improve passenger comfort. The “aspirated cooling” exhaust system was revised, the twin tubes being fed into a muffler with a perforated inner skin and fireproof wool-packing between its inner and outer wall. The exhaust was then finally ejected via a horizontal slit at the rear of the lengthened engine nacelles, significantly reducing cabin noise.

Finnair’s first factory-fresh CV-440, OH-LRD, arrived in April 1956, the company’s three 340s — OH-LRA, ‘LRB and ‘LRC — being sent for modification to CV-440 standard around the same time. On the 21st of that month, Finnair held a press junket for the type’s introduction into service on the London—Helsinki route, and invited John and Patricia to fly on the inaugural Finnair Metropolitan service, which would route through Amsterdam and Hamburg. As the pair reported in the June 29, 1956, issue of *Flight*:

“Finnair has a great reputation for punctuality, which is well-deserved, and at the scheduled 1420hr we taxied away from the apron to take our place in the queue at the run-up position.

With the brakes released the CV-440 accelerated smartly, leapt into the air and climbed away steeply in the tradition of its forebears, the 240 and 340. The airborne time for the first sector to Amsterdam was 1hr 15min, giving us time to enjoy lunch and inspect the cabin.”

Having found the interior décor of purple seats, light-grey and leaf-green window curtains and two-tone light brown cabin walls and bulkheads satisfactory, John noted that the aircraft usually cruised at 225kt at 15,000ft (4,600m) and was operated on most routes with a pilot and copilot plus two stewardesses, exceptions being the Moscow route, which also required a radio operator, and the service to Jyväskylä, on which only one stewardess was employed. The pair’s report also praises the Metropolitan’s built-in stairway and carry-on baggage stowage, and explains that “although the 440 is not a new aeroplane, it is a useful one



*A typical line-up on the ramp during a busy day at Helsinki-Vantaa in 1956; nearest the camera is CV-440 OH-LRD, beyond which may be seen the fin of Finnair CV-340 OH-LRA (still in the airline's older predominantly bare-metal scheme), with Scandinavian Airline System Douglas DC-4 LN-IAE at the far end. The introduction of the CV-440 heralded a smart new white, blue and bare-metal colour scheme for Finnair.*



and it is pleasant from a passenger's point of view and excellent from that of the crew".

The report continues: "It is strictly an improved CV-340 but it comes into service with a fine background of successful operating experience and its four-across seating and fine windows are certainly passenger attractions".

The last leg of the flight, from Hamburg to Helsinki, took nearly 4hr, the first third in daylight and the remainder in darkness, John and Patricia reporting that "Stockholm from 13,000ft [4,000m] on a clear night is a magnificent sight that passes beneath far too quickly . . ."

### **A trip to the Arctic Circle**

Since the pair's last visit in 1949 air transport in Finland had seen exponential growth, especially on the domestic routes, which by 1956 were linking 13 Finnish towns and cities to the capital on a daily basis, with some operating up to five flights daily in each direction. The DC-3s used on the routes had been upgraded to carry 26 passengers and some of the routes included at

least one daily 44-passenger Convair flight.

In 1937 Aero O/Y had flown just over 46,000 miles (74,000km) and carried 1,432 passengers; in 1949 the comparative figures were 491,000 miles (790,000km) and 33,893 passengers — a very impressive uplift. By 1956, however, the figures had surpassed 2,000,000 miles (3,220,000km) flown and 184,543 passengers carried on domestic services alone — the latter representing an increase of more than 540 per cent in seven years, all the more impressive in a country with a population of little more than four million.

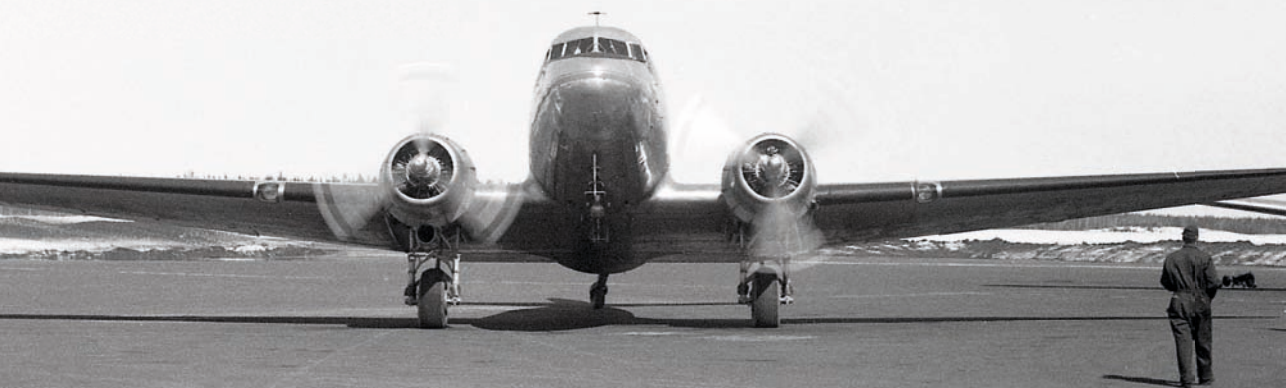
Following John and Patricia's arrival in Helsinki on April 21, arrangements had been made for the pair to fly on the inaugural CV-440 service from Helsinki to Jyväskylä the next day, the flight taking 46min at a maximum altitude of 6,000ft (1,800m). The return flight to Helsinki was made the same day aboard DC-3 OH-LCG, which took slightly longer. Typical of the pair, however, was their desire to experience the more remote aspects of the Finnair domestic network, and on April 26 John and Patricia boarded DC-3

*Bearing neither Aero O/Y nor Finnair titles, only the legend "Finnish Airlines" along its fuselage, Douglas DC-3 OH-LCC Tiira stops for refuelling at Kemi during John and Patricia's flight "up-country" from Helsinki-Vantaa to Rovaniemi on April 26, 1956.*





**TOP** Finnair crew from DC-3 OH-LCC deliver the mail to Rovaniemi (the “official home of Santa Claus”). **ABOVE LEFT** The administration building and control tower at Rovaniemi — the airport’s name is spelled out with reindeer antlers. **ABOVE RIGHT** Patricia Stroud outside the Pohjanhovi Hotel in the Lapp capital. **BELOW** Ten DC-3s were operated by Aero O/Y and Finnair from 1946, nine of them ultimately going on to serve with the Finnish military.







**LEFT** Another bit of *exotica* photographed by John at Helsinki in 1956 was Aeroflot Ilyushin IL-12 CCCP-J1819, operating on the Moscow—Leningrad—Helsinki service. Powered by a pair of 1,850 h.p. Shvetsov ASh-82 piston engines, the 21-passenger IL-12 was dependable — but uneconomical.

**BELOW** Delivered in April 1956, CV-440 OH-LRD was followed into Finnair service by OH-LRE and 'LRF the following year, with 'LRG joining the fleet in April 1961. The airline's CV-340s were upgraded to Metropolitan standard.

OH-LCC bound for Rovaniemi via Oulu and Kemi. The pair's report described the flight:

"Flying over Finland even for short periods gives the key to the popularity of air transport in that country. Most of the southern part of the country is an intricate tangle of land and lakes, the most-quoted figure for the number of lakes being 60,000 [*now numbered at nearly 188,000 — Ed.*], with most of them in the south. The only direct route from one town to another is by air; all other means of transport such as buses, trains and boats have to undertake beautiful but time-wasting meanderings to complete their journey."

Air transport in Finland had made travel not only infinitely speedier but had also connected towns and conurbations which previously had no natural links, bringing them increased prosperity. The report explained: "A typical comparison of transport times is for the route from Helsinki to Jyväskylä, which is about 150 miles [240km] in a straight line; the Convair time between these points is 55min, while the bus takes 7½hr and the train about 9hr".

With stops at the somewhat primitive yet efficiently-staffed airports at Oulu and

Kemi completed, the flight from the latter to Rovaniemi took 27min, John and Patricia taking the local bus, which met the DC-3 (and was provided by Finnair free of charge), to the centre of town. Sightseeing of the capital of Lapland was duly undertaken before the pair returned to Helsinki aboard the same DC-3 with the same stops along the way.

Four days later John and Patricia bade farewell to Finland for the second time and boarded CV-440 OH-LRD at Helsinki for the return flight to London, the final leg from Amsterdam being flown aboard Convair 340 OH-LRA. It would not be John's last visit, the peripatetic journalist returning in the early 1960s, by which time Finnair had entered the jet age with its introduction into service of Sud Aviation Caravelles on international routes in the spring of 1960. John and Patricia's 1949 and 1956 visits, however, had bookended a period of unsurpassed growth in air transport in the land of a thousand lakes, to create what was at the time the second-largest network of domestic air services in Europe, exceeded only by that of the UK. **NS**





# ARMCHAIR AVIATION

**We take a look at what's available for the aviation history enthusiast in the world of books and other literature, from hot-off-the-press publications to reissued classics**

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## ***Taking Flight: Lores Bonney's Extraordinary Flying Career***

*By Kristen Alexander; National Library of Australia, Canberra, ACT; 8½in x 11in (215mm x 277mm); softback; 280 pages, illustrated; £21. ISBN 978-0-64227-886-9*

IT IS NOT often that a new biography of one of Australia's early female pilots appears, let alone one as interesting as Kristen Alexander's life of Maude "Lores" Bonney, arguably the highest-achieving of the crop of Australian aviatrixes from that "golden age" of pioneering aviation in the 1930s. Marrying into money but becoming bored with the confines of socialite life, Bonney made her first flight with famous aviator Bert Hinkler, a relative of her husband. She subsequently learned to fly in 1930, in the process also becoming a skilled mechanic.

With the encouragement of her husband, Bonney purchased a de Havilland D.H.60 Moth, in which she set several records for long-distance flying in Australia in preparation for an attempt on the record for the first flight by a woman from Australia to England. These included a record for the longest single-day flight by a woman in Australia (Brisbane to Wangaratta) in 1931, and the first female circumnavigation of mainland Australia by air the following year.

Setting off for England on April 10, 1933, Bonney had a difficult run with the weather, culminating in a forced landing on a beach in Malaya, badly damaging the Moth. Bonney and her aircraft were shipped to Calcutta in India, where the aircraft was repaired. She resumed her journey and arrived in England on June 21. With hopes of a speed record dashed, Bonney has long been held as the first woman to fly solo from Australia to England. Indeed, she was awarded the MBE in 1934 in recognition of her achievement. However, as Alexander points out, her interrupted journey cannot strictly be considered a complete Australia—UK flight.

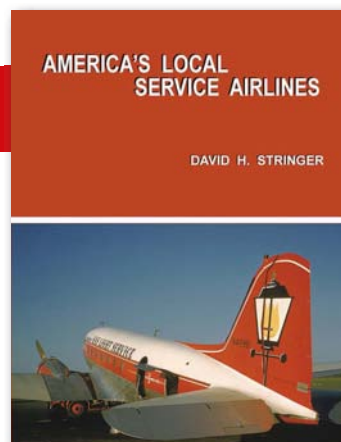
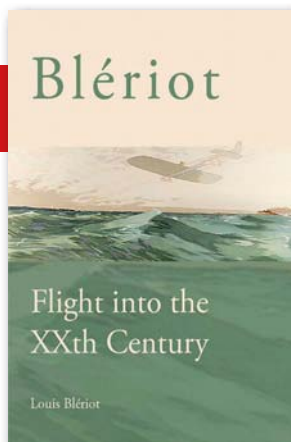
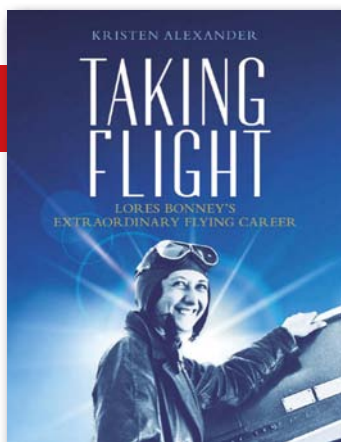
Returning to Australia by sea and casting

about for a new way to make her mark, Bonney hit on the idea of becoming the first woman to fly from Australia to South Africa. Purchasing a Gipsy-powered Klemm 32LX cabin monoplane, Bonney struggled to find sufficient sponsorship to make the project viable. Eventually scraping together the resources, she set off in April 1937. Again encountering bad weather and numerous airworthiness difficulties with the Klemm, Bonney's chances of setting record times were once more shattered. Nevertheless, she persevered and finally reached Cape Town on August 18, 1937. It was a considerable individual achievement, although whether it made any real contribution to aviation is debatable given that she followed the already established Qantas and Imperial Airways routes.

Alexander tells Bonney's story by weaving the flyer's own words into the narrative from published articles, oral histories and her diary-notebooks, now in the collection of the National Library of Australia. These are complemented in this generously illustrated book by numerous reproductions of relevant pages of the notebooks. Along with Alexander's overall context, the result gives a comprehensive picture of Lores Bonney as both aviator and woman. Alexander covers a great deal of interesting ground, from the minutiae of Bonney's preparations, through her trials and tribulations en route, to the casual racism common to those days with which she approached some of the people she dealt with along the way, as well as Bonney's complex relationship with her husband.

There is the occasional odd turn of phrase or questionable construction on operational matters, but for the most part Alexander has avoided problems by seeking and taking advice on technical points, notably from James Kightly (Vintage Aeroplane Writer and *TAH* contributor). This reviewer must declare an interest here too, providing some small advice to Alexander along the way. Another minor criticism concerns the illustrations, in that there is ample space





for many to have been reproduced at a larger size without sacrificing the demands of design. However, these minor points do not detract from what is essentially an excellent and well-rounded biography of one of Australia's important early aviators.

PHIL VABRE

### ***Blériot — Flight into the XXth Century***

By Louis Blériot, Austin Macauley Publishers, 25 Canada Square, London E14 5LB; 8½in x 11½in (210mm x 292mm); 243 pages, illustrated; hardback £47.99 (ISBN 978-1-84963-524-0), softback £39.99 (ISBN 978-1-84963-517-2)

THE LAVISH FIRST French-language edition of this book, by the grandson of the famous French pioneer, appeared in 1994, and was followed in 2010 by a revised edition. This English-language version, which I had never expected to see, is a translation of the latter, and is very welcome. It recounts the story of Louis Blériot and his early trials and successes, and presents the whole gamut of Blériot, SPAD, Blanchard and Guillemin aeroplanes in one volume for easy reference, with other products such as automobile headlamps and road vehicles also included. It would have been rather better, however, had the translation been undertaken by someone who was familiar with aviation technology and terminology.

The translation is often very literal, to the point where sentences are clumsy, and it would have benefited greatly from further work by a literate aviation specialist. To give a few examples, the Blériot XXVI is said to have had "an incidence corrector incorporated into the elevator" (a variable-incidence tailplane); undercarriages on some early aircraft had "blade springs" (leaf springs); "mobile" is used when movable is meant, undercarriages have "deep range" (long stroke) and ailerons are balanced by

"garden benches" (park-bench aileron balances). The words biplane and tailplane are quaintly hyphenated, the wings of the Blériot LXVII were "semi-supple" (?) and, best of all, Blériots were purchased for the "Royal Navel Air Service".

Despite this the book is readable and certainly useful, containing by far the best and most complete coverage of an extraordinary variety of aeroplanes, ranging from the simple and elegant to the downright cumbersome and ugly. Well-reproduced images of the machines actually built, and drawings of the numerous projects, are all accompanied by technical details, basic data and histories, some lengthy and others brief.

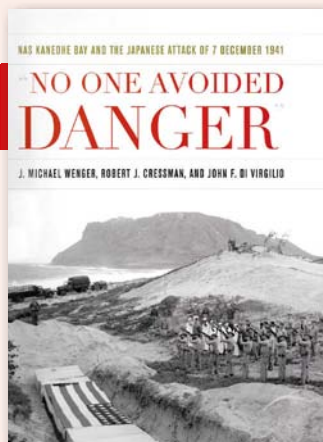
PHILIP JARRETT

### ***America's Local Service Airlines***

By David H. Stringer; American Aviation Historical Society, PO Box 3023, Huntington Beach, CA 92605, USA; 8½in x 11in (215mm x 278mm) softback; 120 pages, illustrated; £27.95 from [www.amazon.co.uk](http://www.amazon.co.uk). ISBN 978-0-98010-921-4

FIRST, A DECLARATION of interest. The author of this new book on the fascinating history of the USA's post-war Local Service Airlines is a member of the Editorial Board of *TAH*, and a regular contributor to its pages (see pages 78–89 of this issue). Indeed, this journal played some part in the genesis of this definitive tome, having commissioned its author to write his excellent two-part series on the Locals in 2013 — see *Putting Main Street USA On The Map* in *TAH3* and *Fly America!* in *TAH4*.

The story of America's Local Service Airlines is a sprawling, complex one, with a great deal of detail that agonisingly had to be left on the cutting-room floor of that series; to its credit the American Aviation Historical Society took up the baton and gave award-winning airline historian David Stringer free rein to present the full histories of all 13 of these post-war civil



operators that could only survive by means of a decidedly un-American business model.

The birth of the Locals can be traced back to a decision by the Civil Aeronautics Board (CAB) in 1943 to investigate the post-war possibilities of extending air services to the nation's smaller towns and cities, much as the railroads had opened up the country during the previous century. The notoriously poor economics of short-sector routes, however, made such services extremely unattractive to the numerous air-minded individuals who saw a gold-edged future in post-war air transport. With a readily available supply of highly-trained pilots and cheap aircraft, there would be money to be made — providing the economics could be made to work. And therein lay the rub.

To make these rural routes more attractive to fledgling local-service airlines, the government decided on a policy of providing subsidies for carrying mail to these remote urban outposts. Thus in 1945 the CAB issued 25 "Feeder Airline Certificates", the idea being that these operators would bring traffic from the smaller towns and cities to points from which passengers could connect with America's growing network of "trunk" routes. By 1955 a dozen of the original 25 had thrown in the towel, leaving 13 permanently certificated Local Service Airlines to run subsidised services within their designated regions.

Following an introduction and opening chapter in which the author elegantly draws these strands together in his usual easy-to-read but fact-rich style, the remaining chapters are devoted, one each, to the 13 Locals: Allegheny Airlines; Bonanza Air Lines; Central Airlines; Frontier Airlines; Lake Central Airlines; Mohawk Airlines; North Central Airlines; Ozark Air Lines; Piedmont Airlines; Southern Airways; Southwest Airways; Trans-Texas Airways and West Coast Airlines.

Despite none of the parties involved in the

Locals concept ever being fully comfortable with the decidedly pinkish idea of direct government support, the 13 nevertheless survived and thrived to varying degrees, a highpoint being reached as the propliner glory days of the 1950s turned into the 1960s jet age. By the early 1970s the future was looking less bright for the Locals, some of which had fallen by the wayside, and, with the advent of the Airline Deregulation Act in 1978, the survivors either went to the wall or merged with bigger companies.

This is an invaluable resource work for serious students of airline history, as well as a highly readable account of an unusual American experiment to encourage a state-sponsored service rather than relying on the almighty profit motive. This exhaustive volume has copious illustrations, including colour photographs and timetables; the only shortcomings being the poor-quality uncoated paper it is printed on and its less-than-elegant design. These are relatively minor quibbles, however, especially in light of the sheer wealth of material contained within.

**NICK STROUD**

### ***No One Avoided Danger — NAS Kaneohe Bay and the Japanese Attack of 7 December 1941***

*By Michael J. Wenger, Robert J. Cressman and John F. Di Virgilio; Naval Institute Press, 291 Wood Road, Annapolis, MD 21402; 8½in x 11in (215mm x 278mm) hardback; 208 pages, illustrated; £24. ISBN 978-1-61251-924-1*

IT IS A somewhat strange realisation that of all the books and articles about the Japanese strike of December 7, 1941, no publication has specifically addressed the then recently-opened Naval Air Station at Kaneohe Bay on Oahu and what its people went through that same day, even though it was only 15 miles from Pearl Harbor itself. As terrible as the destruction was at Pearl Harbor, that at Kaneohe Bay was just



# THE FLYING MACHINE

Edited by Jonathan Fallon, e-mail [editor@aerodynamicmedia.com](mailto:editor@aerodynamicmedia.com); online PDF download, but 8¼in x 10¼in print-on-demand version also available; 46 pages, illustrated; US\$6 per issue for PDF, US\$16 (plus p&p) for print; quarterly frequency. Website [www.aerodynamicmedia.com](http://www.aerodynamicmedia.com)

FOR ALMOST five decades, the idiosyncratic, niche-within-a-niche journal *WW1 Aero* (founded and for many years edited by Leo Opdycke) catered for devotees of early aviation in its historic, restoration/replication/flying and modelling aspects. Sadly, May 2016 saw the publication of the 227th and final issue, as the trustees of not-for-profit parent company World War 1 Aeroplanes Inc elected to dissolve the organisation. Happily, six months later, *WW1 Aero*'s last editor launched a successor.

October 2016's debut issue of *The Flying Machine* perpetuates the spirit if not the appearance of its progenitor, focusing on pre-1920 aviation and featuring a good mix of historical features, restoration reports and preservation news, with a bit of modelling thrown in (in the shape of photographs of a 1/6th-scale Sikorsky Il'ya Muromets). Highlights among the main articles include a piece by Simone Short on Octave Chanute's 1904 glider ("the first American aeroplane export") and a generous selection of fine colour photographs (we reviewed the PDF version only) of the Virginia-based Military Aviation Museum's Royal Aircraft Factory S.E.5a project. *TAH* wishes *TFM* every success. **MO**

as bad, and the results greatly contributed to the overall effect of the surprise attack on the American forces and affected American morale, which dipped severely for the next six months.

With this book, three experienced writers have closed the gap and given us what almost amounts to a hymn in praise of how the people of Kaneohe met the attack. Using a medium format that takes advantage of many unpublished photographs, this book offers readers a well-researched narrative that divulges personal and operational details previously unseen in other accounts of the attack. Members of the US Navy and Marine Corps, civilians and members of the Japanese strike force are all shown engaged in their activities before, during and after the attack.

There are a few awkward style issues which occasionally hinder the text, such as inserting apostrophes in Hawaiian place names, ostensibly to follow the native form, which this reviewer found uncomfortable. Also, reference to Japanese aircraft in their native terms is understandable, but the Mitsubishi Zero's official designation was *reisen* not *kansen*. The explanation in the early pages noting that the Allied codename system did not enter service until late 1942 is correct. However, a case may be made that these codenames are how these aircraft are widely known by the reading public and perhaps would have served the text better with their inclusion.

The authors made use of the National Personnel Records Center in St Louis, Missouri, which is commendable; it is a major but rarely used primary source of information, mainly because of the difficulty of retrieving such important information for non-family members. Photographs of a few of the more important individuals on both sides would have sufficed, leaving more room for pictures of specific aircraft. Japanese sources and websites might have offered several unique views of the aircraft actually participating in the raid of December

7, 1941, and not smoky scenes with a caption pointing out a fading image of a Zero high above the devastation.

Despite the above criticism, this is an unusual and worthwhile treatment of a well-known subject and is hopefully only the first volume in a continuing series of titles that focus on more specific areas of the strike that hurled America into its most important conflict.

PETER B. MERKSY

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## ***The Dornier Do 335 Pfeil: A Complete Guide to the Luftwaffe's Fastest Piston-engine Fighter***

By Richard A. Franks; Valiant Wings Publishing, 8 West Grove, Bedford MK40 4BT; 8¼in x 11¼in (210mm x 297mm); softback; 144 pages, illustrated; £18.95. ISBN 978-0-9935345-5-3

VOLUME NINE in the publisher's *Airframe & Miniature* series, this is another substantial and high-quality product, aimed mainly at modellers, on a fairly well-known but nevertheless engagingly unorthodox type.

Five well-illustrated "airframe" chapters cover respectively the push-pull fighter's prototypes; the production A-series; the B-series which never entered service; projects; and camouflage and markings. Four "miniature" chapters look at aspects of modelling the Do 335 and provide detail photographs from historic sources and of the sole survivor, an A-0 preserved in the National Air & Space Museum Udvar-Hazy Center at Washington DC.

A fold-out set of crisp scale drawings (although a few fuselage and wing sections would be welcome; there's space!) top off exactly what it says on the tin: a satisfyingly "complete guide".

MICK OAKEY



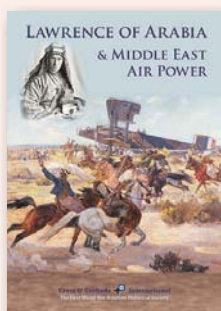
# BOOKS IN BRIEF

*A quick round-up of what else is currently available for the aviation history enthusiast*

## LAWRENCE OF ARABIA & MIDDLE EAST AIR POWER Various authors

Cross & Cockade International;  
ISBN 978-0-95557-347-7;  
£12.50 + p&p

TYPICAL OF the high-quality research undertaken by First World War aviation specialists Cross & Cockade, this invaluable A4 80-page softback compendium of articles on T.E. Lawrence and the early days of air power development in the Middle East draws together a number of previously published articles from the organisation's enviable archive, along with new material from its dependable contributors, including Peter Dye and Peter Wright. Printed on high-quality paper with excellent repro, this is a shining example of how aviation history should be done. **NS**



## DOUGLAS C-54/R5D SKYMASTER AND DC-4 Charles Stafrace

Guideline Publications; no  
ISBN; £19.50

THIS LATEST addition, No 109, to the long-running *Warpaint* collection concentrates on the military variants of the DC-4 — as the series title suggests — but certainly includes enough material on the civil side to attract propliner aficionados as well. The 92-page softback is profusely illustrated with colour and black-and-white photographs and colour profiles, as well as a loose-insert set of scale drawings by Richard Caruana which could be improved only by the addition of some fuselage/wing sections and scrap views. Lots of data boxes complete a busy and businesslike monograph. **MO**

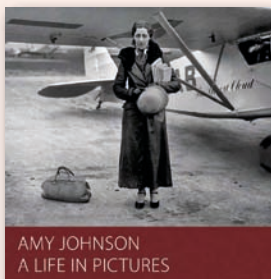


## AMY JOHNSON: A LIFE IN PICTURES

Edited by Rick Welton

Amy Johnson Festival Ltd  
ISBN 978-0-95683-858-2;  
£18 via [www.amyjohnsonfestival.co.uk](http://www.amyjohnsonfestival.co.uk)

PUBLISHED TO coincide with the Amy Johnson Festival, held during July–September 2016 to commemorate the 75th anniversary of the death of one Hull's most famous personalities, this exceptional collection of beautifully-reproduced images covers the aviatrix's entire life, from a Hull studio portrait of the four-year-old Amy to the last pictures of her before her death in 1941. Clearly a labour of love, this extremely handsome 10in x 11in (254mm x 280mm) hardback uses the squarish format brilliantly to give the photographs plenty of room to breathe, the captions providing plenty of solid info. A thing of beauty and a steal at the price. **NS**



## SPITFIRE ACE Gordon Olive DFC

Amberley Publishing; ISBN 978-1-44556-020-2; RRP £9.99

QUEENSLANDER Gordon Olive sailed to England in early 1937 to join the RAF and, after training, joined No 65 Sqn, with which he served during the Battle of Britain. This is a paperback edition of Olive's excellent memoir of his nine-year flying career with the RAF and RAAF. Although his recollections (about much more than just the Battle of Britain — the usual marketing-keyword subtitle nonsense) remain sparkling (thanks to the skilful research work and editing of Dennis Newton), Olive's fascinating paintings, similar in tone and style to Paul Nash's Battle masterpieces, are ill-served by the paperback format. It's a good read — but buy the hardback if you can. **NS**



## THE AVIATION DEPARTMENT OF THE ROYAL ARMY MUSEUM IN BRUSSELS

Charlie de la Royère  
[info@editionspath.be](mailto:info@editionspath.be); ISBN  
978-2-93063-926-0; RRP €30

ESSENTIALLY A directory of the 144 aircraft exhibits housed in Belgium's Royal Museum of the Armed Forces & Military History in Brussels, this rather confused and confusing tome provides a photograph of each of the 144 exhibits, from Aero L-29 to Yak 11, with its serial and/or construction number, and a few paragraphs on the type. The text is in English, Dutch and French. Classic curate's egg. **NS**



## PFALZ D IIIA AT WAR! Volume One

Greg Van Wyngarden

Albatros Productions; ISBN  
978-1-906798-50-5; £12.50

RELIABLE REFERENCE material for the World War One era is the hallmark of the *Centenary Datafile* series, of which this is No 173. Germany's slim and elegant Pfalz D IIIA fighter offers an attractive and often colourful subject for modellers, and here a set of excellent scale drawings by Mick Davies — plus colour artwork by Ronny Bar — complement the concise text, 80+ archive photographs (many previously unpublished) and detailed captions. A second volume on the Pfalz is in the pipeline. **MO**






# Lost & Found

**PHILIP JARRETT** explores the lesser-known corners of aviation history, discovering unknown images and rediscovering long-lost details of aircraft, people and events. This time he explores a curiously unreported mystery involving Winston Churchill and a B.E.2

**T**HE PICTURES FOR this issue's *Lost & Found* are no doubt familiar to some readers. They depict Winston Churchill, then First Lord of the Admiralty (in flying helmet), alongside a Royal Aircraft Factory B.E.2 in which he had just flown from the Central Flying School (CFS) at Upavon to the drill field at Hilsea Barracks, Portsmouth, on May 29, 1914. His pilot was Maj E.L. Gerrard, RMLI, of the CFS.

What I find intriguing is the fact that the aircraft has evidently suffered a landing accident, as can be seen from the broken port undercarriage skid, which is sticking up at a conspicuously acute angle, and the aeroplane's lopsided stance, which suggests that the bungee suspension on that side has failed. Even more curiously, reports of the event I have seen do not contain any reference to the mishap. I find it hard to believe that someone did not pick up on this slightly embarrassing incident. Or did they? 



**ABOVE & BELOW** Shots of Winston Churchill with the B.E.2 in which he was flown from Upavon to Portsmouth by Maj Gerrard on May 29, 1914. The broken port undercarriage skid is conspicuous.





**Lake**  
**AIRCRAFT**

**JUST  
ADD**

**WATER**

In 1981 renowned aviation author and private pilot **BILL HARRISON** was looking for a new flying challenge when he spotted a notice at his local flying club advertising affordable stick-time in a Lake LA-4 Buccaneer amphibian. After a long day's wait while local dignitaries viewed the neighbourhood from the air, he got his chance to make his first take-off from water — just as the light was beginning to fade . . .







**T**HE SIGN ON the noticeboard at the flying club at Tollerton said: "For something completely different, try seaplane and amphibian training on a Lake Buccaneer; a 200 h.p. four-place amphibious flying-boat". The offer was for club pilots to have the opportunity to fly the amphibian, and for those a bit better off to get a seaplane rating in their logbooks. "Wow," I thought, "I would like to fly that". I decided I could just afford an hour, so I put my name down for groundschool training, which was to be completed at the club. Opportunities like this only come around once in a pilot's lifetime.

The Lake LA-4 Buccaneer was powered by a 200 h.p. flat-four Avco Lycoming IO-360 pusher-configured engine mounted on a pylon atop the hull just behind and above the cockpit. The particular aircraft in question, G-BWKS (c/n 680), was owned by Philip Newall, who was trying to get the amphibian idea more accepted by those who might be interested in the luxury of transport to/from near home or business premises. He was, however, coming up against officialdom, as the authorities demanded a licenced water operation.

By this time, the early 1980s, Phil was operating from a licenced water aerodrome on the Medway. The training pilot was Keith Sissons of Seawings Training Services, who would become well known later as one of the pilots who displayed Boeing B-17 Flying Fortress

*Sally B*, based at Duxford. The training evening was to be an introduction to the vagaries of waterborne operations and we went away feeling excited about — and slightly scared of — what we had let ourselves in for.

#### WORTH THE WAIT

Phil had secured approval to use the Holme Pierrepont Water Centre on the River Trent on the outskirts of Nottingham, and on the morning of November 4, 1981, our intrepid group assembled at the venue. Phil, ever the businessman, told us that we would be flying after a number of local dignitaries had taken their turns. Which went on and on. I think word had spread and as the day wore on some of us started to have misgivings about whether we would get a flight that day. Some from the flying club were fitted in, but my trip was getting later and later; I was obviously way down on the list.

Eventually, in the late afternoon, Keith called me across and installed me in the amphibian as pilot in command. We fired the Buccaneer up and Keith waddled us down into the water. If you have never sat in a Lake Buccaneer, the water comes up to just below the cockpit coaming. Keith explained everything in detail and lowered the water rudder. As I opened the throttle, located in the central overhead position as per most flying-boats, I started taxiing to the far end of the watercourse, which was a comfortable 2,000m (6,600ft) in length.

To commence taxiing the throttle should be

**OPPOSITE PAGE & ABOVE** *Lake LA-4 Buccaneer G-BWKS (c/n 680) at the Holme Pierrepont Water Centre near Nottingham on November 4, 1981. The author is at the controls as Kilo Sierra rides the step. Built in 1975, the aircraft was initially registered as G-BDDI, becoming G-BWKS when acquired by Philip Newall in November 1979.*



**ABOVE** Kilo Sierra wades out at the water centre; note the unusual split elevators. Sold in the USA in 1984, 'WKS returned to the UK in 1985 to become G-BMGY until 1999, when it was sold again to become G-SKID. It was written off after a non-fatal accident at Hawarden in August 2003. **BELOW** The author riding the step in G-BWKS in 1981.

opened sufficiently to get the aircraft moving and then immediately closed to prevent too much speed from building up. Excessive speed is difficult to lose quickly on the water and throws spray over the aircraft. Also, when taxiing downwind it is necessary to maintain sufficient slipstream over the air rudder to overcome the weathercocking effect. Keith took over and showed me how simple it was to operate the Buccaneer, first by opening the throttle fully and then crossing the controls. The aeroplane skidded and yawed alarmingly across the surface of the water to the left; Keith then reversed the controls and we skidded off to the right. All exciting stuff! He then explained that as we could not stop at the other end to do an engine run-up to check the magnetos, the checks had to be done downwind at taxiing speed as

we moved towards the take-off point. All this I achieved with some alacrity and not without some humour.

### **AWAY WE GO!**

As we reached the take-off point I swung the Buccaneer in the direction of take-off and opened her up. The secret was to get her on the "step", ease the controls forward and lift off at the appropriate speed. As we climbed out I could see Nottingham dead ahead with the evening lights beginning to come on.

Once we were downwind at 90kt Keith gave Tollerton a call and we performed the downwind checks. It was a Thursday, which meant Tollerton was operating that night. As I completed the base leg and then finals, Keith said he wanted me to alight on to the step and to go straight off





## FROM TADPOLE TO BUCCANEER: THE LAKE LA-4



TAAH ARCHIVE

again, which is what I did. I was elated — this was exciting stuff! We did another circuit with Keith calling Tollerton again and he said this time to make it a full alighting, i.e. to alight and reduce power quickly, at which point the water slowed us up alarmingly.

After we alighted, Keith turned to me with a twinkle in his eyes and said, "One more?" By now the light had almost gone and I queried his decision to make another circuit. He said there would be just enough light for one more circuit and, as I was on a high, we went back to the take-off position and I once again launched Kilo Sierra into the air. This time it was different. As I got airborne the light was really fading and Nottingham stood out like a fairground. Once downwind I looked out to my left but could only just make out the water centre and remarked to Keith about my limited flying ability at night on water! "Never mind," he said, "if it looks dangerous we can always go into Tollerton; after all we are an amphibian!". There were no lights at the water centre as Keith was operating under daylight rules and we did not plan on flying after dark. As it was, I alighted in the pitch dark and Keith grinned at me as we taxied to the ramp and he took over to retract the water rudder and take the aircraft out of the water.

As we had coffee afterwards he remarked that he reckoned I had just made the only night alighting in a flying-boat in the UK since the end of the Second World War. Unless someone knows better, of course . . .



IN 1946 FORMER Grumman employee David B. Thurston established the Colonial Aircraft Corp at Sanford, Maine, to build a 2/3-seat amphibian inspired by the 1944 G-65 Tadpole design abandoned earlier by Grumman. The prototype, designated the Colonial XC-1, could carry three passengers and flew for the first time on July 17, 1948. The production version, the C-1 Skimmer, of which 24 were built (as seen **ABOVE**), powered by a 150 h.p. O-320 engine, was followed by 18 four-seat C-2 Skimmer IVs before the company was declared bankrupt in 1959.

The Lake Aircraft Corp was formed to take over Colonial's assets and created the LA-4P, an improved C-2 with a bigger wing, the prototype of which, N261B, made its maiden flight in November 1959. Two pre-production LA-4As were built, followed by production of the strengthened LA-4 with a 4ft (1.22m) wing extension and a 1ft 5in (0.3m) longer bow. The Lake Aircraft Corp was itself taken over by Consolidated Aeronautics in 1962, and after a number of changes in ownership was acquired by Armand Rivard in September 1979, by which time the company had become Lake Amphibian Inc.

Since then the four-seat LA-4 design has seen regular powerplant upgrades, with total production of all variants reaching more than 1,300 by the late-2000s. In 1982 the 5–6-seat LA-250 Renegade was launched, including a sole radar-equipped Seawolf military variant able to carry bombs, rocket projectiles or machine-gun pods on underwing hardpoints. Other variants include the Special Edition Seafury, corrosion-proofed for saltwater operations. Since the late 2000s Rivard has been looking to sell the company and the LA-4's FAA Type Certificate. **NS**



# OFF THE BEATEN TRACK ↗

PHOTOGRAPHS BY THE AUTHOR

*Ever turned a corner to find something unexpected? The Aviation Historian's intrepid aeronautical explorer **PETER DAVISON** investigates the stories behind the oddities that turn up in the most unusual places . . .*

**B**ARGAIN "HUNTING" in Stockholm? Why not take a detour to "check out" the Percival Pembroke hanging above the tills at this Maxi superstore? In total, 132 Pembrokes were built at the Percival (Hunting Percival from 1954) factory at Luton, as an increased-span military development of the company's Prince light transport, the prototype Pembroke making its maiden flight on November 21, 1952. Some 55 examples served with the RAF during 1953–90, mainly in the Middle East and on liaison/training duties in the UK.

The Pembroke was exported to West Germany, Belgium, Denmark, Finland, Rhodesia, Malawi, Sudan and Sweden, the last-named's *Flygvapnet* (Swedish Air Force) operating 18 examples as the Tp 83. This example, serial 83004 (c/n 46), was delivered to Wing F 1 at Västerås in March 1955. In 1975 it was retired, having accrued 4,680 flying hours, and acquired by the Zimmermanska Technical School at Västerås, which used it as a training aid, before selling it on to the superstore at the Eurostop shopping area in Märsta, close to Stockholm's Arlanda Airport, around 1997.

The airframe was repainted in a red-and-white colour scheme and put on display above the tills in 1998. Seen here in 2016, the aircraft has remained in the same position since then.

**ABOVE & BELOW** Heads up! Percival Pembroke c/n 46, designated as Tp 83 serial 83004 in *Flygvapnet* service, offers a unique centrepiece at the Maxi superstore at Märsta. The cartoon dog painted on the sides of the forward fuselage is presumably Sir Rabalder, as that name is written next to him!







## Coming up in future issues:

**Blackbird in Blighty** Military aviation specialist Bob Archer takes an in-depth look at the East Anglian deployment of the USAF's enigmatic Lockheed SR-71, from 1974 to 1990

**Pole Position** In 1936 Norwegian airline DNL took delivery of a Sikorsky S-43 amphibian to open up a vital North Atlantic route to the USA; Rob Mulder explores why the plan failed

**Monsieur Moineau's Monstrosity** Alain J. Pelletier tells the full story of the 1916 Salmson-Moineau SM-1 biplane and its bizarre sideways-mounted radial engine



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